OXERA

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DEPARTMENT OF TRADE AND INDUSTRY

ENERGY MARKET COMPETITION IN EUROPE AND G7

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Executive Summary

The Department of Trade and Industry (DTI) has a Public Service Agreement (PSA) target to ensure that the UK ranks in the top three most competitive energy markets in the EU and G7 in each year. In 2003, OXERA established a methodological framework to use as a basis for evaluating the competitive framework in place, allowing the UK's relative performance in this area to be assessed. Using this methodology, it was shown that the UK had met this target in 2002, having the most competitive energy market of the EU and G7.[1]

This report undertakes the same analysis for 2003 to determine whether the rankings have changed compared with 2002. In addition to assessing performance in 2003, the report confirms the results of the 2002 target using an updated dataset.

Confirmation of 2002 ranking

In the 2003 report, several data sources were either unavailable—for example, market shares of each of the three largest suppliers in the domestic and industrial and commercial (I&C) retail markets—or were only available for previous years (usually 2001, but, in some cases, 2000).

As part of this study, the 2002 dataset has been revised to provide a more accurate representation of industry structures and market performance in 2002. Only in some of the retail market-share information does there remain a lack of appropriate reporting and data provision. Table 1 shows that, using the updated dataset, the UK still achieves the PSA target and remains the most competitive energy market.

Table 1: Comparison of preliminary 2002 and final 2002 rankings and scores

	Preliminary 2002 score	Final 2002 score	Adjustment in score	Preliminary 2002 ranking	Final 2002 ranking	Adjustment in ranking
UK	7.7	7.7	0	1	1	no change
Sweden	7.0	7.4	+0.4	2	2	no change
Finland	6.1	6.4	+0.3	3	3	no change
Austria	6.0	6.0	0	4	5	–1
Spain	5.4	6.1	+0.7	5	4	+1
Italy	2.9	3.6	+0.7	6	6	no change

Source: OXERA.

Interestingly, no score was adjusted downwards, although neither the UK nor Austria saw any increase in their scores. As a result, the UK's absolute score advantage over the other comparator countries fell: Sweden, the country ranked in second place, rose from 7 to 7.4, and Austria dropped one place in the ranking to fifth, being overtaken by Spain.

[1] DTI (2003), 'Energy Market Competitiveness Report: The Relative Extent of Energy Market Competition in the EU and G7', September.

Assessment of 2003 PSA ranking

The 2003 PSA target was assessed against a revised comparator group and with a new dataset containing, where possible, information for 2003. In general, the accuracy and availability of data are improving, but a few gaps remain in the datasets. Applying the same methodology as in the previous report, the following countries were selected as relevant comparators for the more detailed scoring analysis:

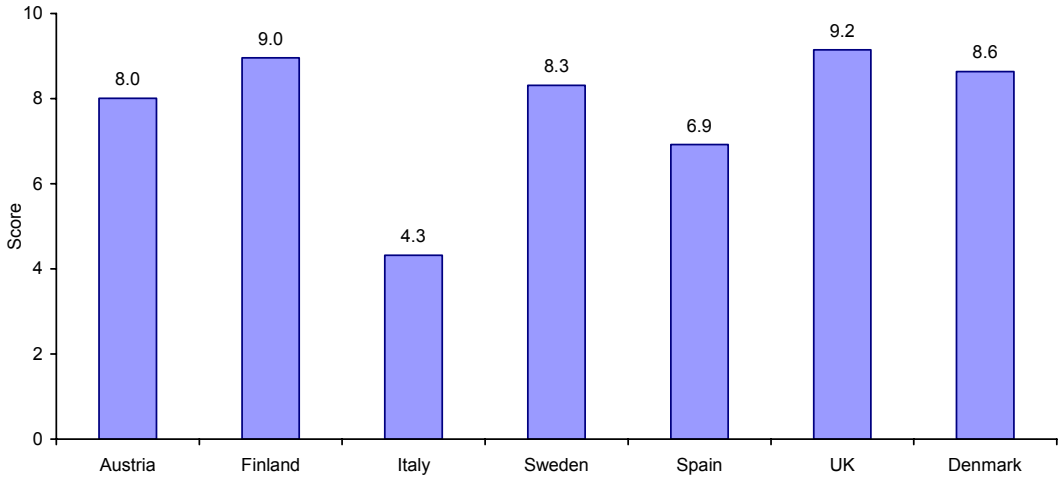
Austria	Denmark
Finland	Italy
Spain	Sweden
UK	

Of these, only Denmark was not part of the previous comparator group.

Electricity market competitiveness

Figure 1 shows the overall competitiveness scores for those electricity markets that passed the initial filter in 2003, while Table 2 shows the detailed scores in the four market areas. On the basis of the existing methodology, the UK still has the most competitive electricity market.

Figure 1: Overall competitiveness scores for selected EU electricity markets (preliminary 2003)



Source: OXERA.

The position in the non-competitive areas is now consistent across all the countries, with the main differences therefore arising solely due to variations in the underlying market structures in generation and/or retail supply. Interestingly, where there have been changes since 2002, the score in the competitive segments of the markets has, in all cases, declined or stabilised, consistent with the observed consolidation across many European markets.

Table 2: Disaggregated scores for selected EU electricity markets (preliminary 2003)

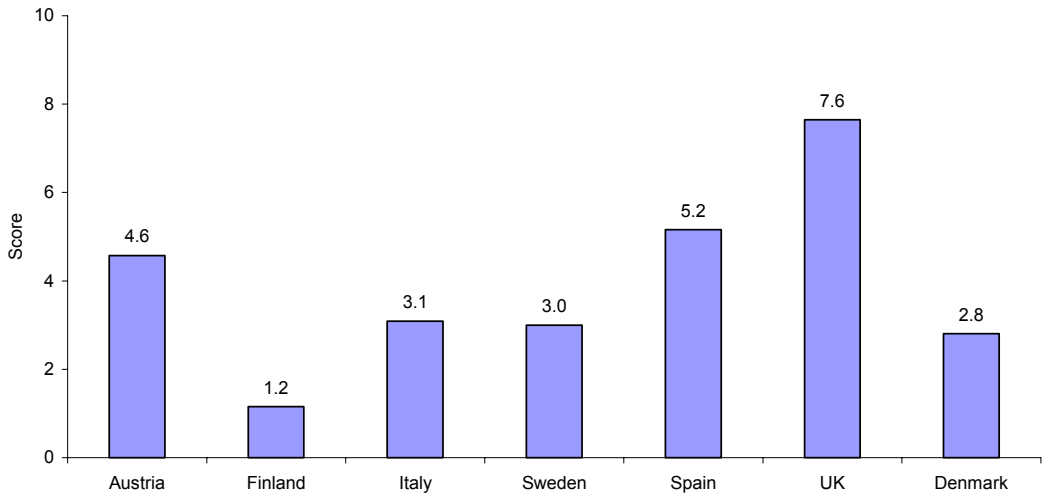
	Austria	Finland	Italy	Sweden	Spain	UK	Denmark
Upstream market	4.4	5.8	3.8	4.4	3.3	8.7	4.4
Wholesale market	8.7	10.0	0.0	10.0	10.0	10.0	10.0
Downstream supply	8.6	10.0	1.9	8.6	3.7	7.9	10.0
Score—all competitive areas	**7.2**	**8.5**	**1.9**	**7.6**	**5.6**	**8.8**	**8.1**
Network-related activities	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Score—non-competitive area	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**
Overall electricity score	**8.0**	**9.0**	**4.3**	**8.3**	**6.9**	**9.2**	**8.6**

Source: OXERA.

Gas market competitiveness

Figure 2 shows the overall competitiveness scores for the relevant gas markets, with Table 3 presenting the disaggregated scores for the four market areas. As can be seen, using the preliminary 2003 dataset, the UK (with a score of 7.6) has the most competitive gas market of those countries passing the initial filter. It is followed, at some distance, by Spain (5.2) and Austria (4.6). Finland has the least competitive gas market (1.2), which is to be expected, given its derogation from the EC Directive. These results confirm the position from 2002 that the structure of the UK's gas market is much more competitive than that of the other countries.

Figure 2: Overall competitiveness score for gas markets (preliminary 2003)



Source: OXERA.

Table 3: Disaggregated scores for gas markets (preliminary 2003)

	Austria	Finland	Italy	Sweden	Spain	UK	Denmark
Upstream market	0.0	0.0	0.0	0.0	0.0	6.0	0.0
Wholesale market	7.9	5.0	0.0	0.0	7.9	10.0	0.0
Downstream supply	0.2	0.0	0.4	0.0	1.5	4.1	0.5
Score—all competitive areas	**2.7**	**1.7**	**0.1**	**0.0**	**3.1**	**6.6**	**0.2**
Network-related activities	9.0	0.0	10.0	10.0	10.0	10.0	9.0
Score—non-competitive area	**9.0**	**0.0**	**10.0**	**10.0**	**10.0**	**10.0**	**9.0**
Overall gas score	**4.6**	**1.2**	**3.1**	**3.0**	**5.2**	**7.6**	**2.8**

Source: OXERA.

Overall energy market competitiveness

Table 4 combines the individual market analyses to present the relevant indicator for the PSA target assessment. The preliminary results confirm that the UK does meet the PSA target for 2003, having the most competitive electricity and gas markets in Europe.

Table 4: Preliminary 2003 results

	Austria	Finland	Italy	Sweden	Spain	UK	Denmark
Electricity market score	8	9	4.3	8.3	6.9	9.2	8.6
Gas market score	4.6	1.2	3.1	3.0	5.2	7.6	2.8
Relative gas market size	0.6	0.38	0.71	0.07	0.5	0.74	0.6
Weighted energy market score	5.9	6.0	3.4	7.9	6.0	8.0	5.1

Source: OXERA.

However, as Table 5 shows, in comparison with the 2002 results, the UK's lead in terms of competitiveness has narrowed significantly, to 0.1 from 0.3, despite an overall improvement in its gas market performance and continued strong competitive position in the electricity market. Apart from the UK and Sweden, for the remaining countries there has been little change in the absolute scores from the 2002 PSA ranking. The major changes are summarised in Table 6.

Table 5: Comparison of final 2002 and preliminary 2003 PSA target calculations

	Final 2002 score	Ranking	Preliminary 2003 score	Ranking
UK	7.7	1	8.0	1
Sweden	7.4	2	7.9	2
Finland	6.4	3	6.0	3=
Spain	6.1	4	6.0	3=
Austria	6.0	5	5.9	5
Italy	3.6	6	3.4	7
Denmark	n/a		5.1	6

Source: OXERA.

Table 6: Summary of major changes in indicators

Country	Electricity market	Gas market
UK	Increased concentration in domestic supply market due to TXU Energi/Powergen merger	
Austria	Increased concentration in generation market due to Verbund–EnergieAllianz merger	Reduction in shipper concentration Development of gas trading Consolidation in retail market
Finland	Increase in generation market concentration	
Spain	Increased concentration in I&C market	Increased concentration in shipping market
Italy	Full retail market opening	Higher concentration in shipper and retail market than previously assumed
Sweden	Distribution unbundling	Reduction in shipper and retail market concentration

Source: OXERA.

Summary

The report confirms that the application of the original ranking methodology shows that the PSA target was met in 2002 and 2003, and that, in each year, the UK had the most competitive electricity and gas markets among the EU and G7 countries.

The inclusion of detailed rankings and scores for both 2002 and 2003 provides some useful evidence on the nature and evolution of competition in energy markets and on the availability of the necessary market information for the application of the ranking methodology.

On the nature and evolution of competition, three main points are worth noting.

- *The degree of competition in gas markets is generally lower than that in electricity markets*. This may be a consequence of the shorter time since the implementation of the EC Directive in natural gas (August 2000) relative to that in electricity (February 1999). However, there are also likely to be issues relating to the supply chain for gas (eg, substantial import dependence and long-term contracting) that create greater obstacles to establishing a competitive market framework.

- *Future competitiveness assessments will focus more on the competitive areas of the market*—that is, the main barriers to non-discriminatory network access in both electricity and gas are being dealt with effectively through changes in legislation.

- *The competitive market indicators (ie, upstream, wholesale and downstream markets) will not necessarily improve year on year*. Merger and acquisition activity will still be possible, such as the acquisition of TXU Energi by Powergen or the Verbund–EnergieAllianz merger in Austria, which serves to increase market concentration and lower the ranking score. Nevertheless, such activity can be seen as a sign of an efficiently operating capital market and the justification for such mergers may not be solely on the grounds of competition.

With regard to data availability, the research for this report has shown that:

- more up-to-date information is becoming available for the majority of countries, with a primary source for recent data being the national regulators;
- the pan-European datasets, such as the annual European Commission benchmarking study, exhibit more consistency in the data provided (as they are compiled according to standard definitions). However, they also tend to be subject to longer time lags in reporting, and the information presented does exhibit some discrepancies with national data covering the same period, calling into question the validity of some of the information;
- market-share information is variable in quality and availability. In countries such as the UK, the I&C shares are not provided explicitly owing to commercial confidentiality, whereas in other countries there is often no distinction provided in the market share between different retail sectors.

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1. Introduction

The Department of Trade and Industry (DTI) has a Public Service Agreement (PSA) target defined as follows:

> Ensure the UK ranks in the top 3 most competitive energy markets in the EU and G7 in each year, whilst on course to maintain energy security, to achieve fuel poverty objectives; and (joint target with DEFRA) improve the environment and the sustainable use of natural resources

In 2003, OXERA was commissioned by the DTI to establish a methodological framework to use as a basis for the evaluation of the competitive framework in place in the EU and G7 energy markets, allowing the UK's relative performance in this area to be assessed. The framework, together with an analysis of the UK's performance against the PSA target in 2002, was presented in a report published in September 2003.[2]

The DTI is obliged to report against the PSA target annually and this OXERA report uses the established methodology to analyse the UK's performance against the PSA target in 2003. With many EU Member States taking further steps towards full liberalisation of their energy markets, and with competition becoming more established in markets that are already liberalised, it is to be anticipated that there will be changes relative to the 2002 target performance. This report presents and explains the 2003 results, comparing them with those obtained for 2002. Where differences emerge, reasons for the change are identified.

In addition to assessing 2003 performance, the report revisits the analysis undertaken for the 2002 target. This is because, when the ranking methodology was first applied to the 2002 target, the dataset for the comparator countries was incomplete for 2002, reflecting the immaturity of market monitoring and information-gathering in some markets, and time lags in the publication of relevant data. Thus, the country datasets have been updated to reflect more accurately industry structures and market performance in 2002, and the 2002 calculations have been re-run to confirm the provisional conclusion in the 2003 report.

The report itself is structured as follows:

- section 2 recaps the preliminary 2002 results;
- section 3 discusses the additional data collection that has been possible and reports the results of the application of this dataset to the methodology for 2002, explaining the differences that have arisen with the preliminary 2002 rankings from the 2003 report;
- section 4 presents a preliminary assessment of the 2003 ranking, highlighting where changes in competitiveness have arisen and where data inadequacies have prevented full 2003 datasets from being produced;
- section 5 summarises the results and concludes.

[2] DTI (2003), 'Energy Market Competitiveness Report: The Relative Extent of Energy Market Competition in the EU and G7', September.

2. Preliminary 2002 Rankings

Table 2.1 reproduces the preliminary ranking for 2002 for those countries passing the initial filter.[3] As shown in Table 2.1, six countries, including the UK, passed the initial filter and proceeded to the more detailed indicator analysis and ranking stage. Using the available dataset, the results indicated that the UK passed the PSA target, being the most competitive energy market among the comparator group.[4]

Table 2.1: Preliminary 2002 energy market scores and rankings

Country	Competitiveness score	Ranking
UK	7.7	1
Sweden	7.0	2
Finland	6.1	3
Austria	6.0	4
Spain	5.4	5
Italy	2.9	6

Source: DTI (2003).

Tables 2.2 and 2.3 show that, according to the methodology employed, the UK had the most competitive gas and electricity markets. However, despite achieving significantly higher scores in the gas market than countries such as Sweden and Finland (the UK scored 7.2 as compared with 2.3 and 2.1 for Sweden and Finland respectively), the aggregate score presented in Table 2.1 reflects the relative size of the two component energy markets (gas and electricity). Therefore, the poor performance of the Nordic countries in the gas market has a smaller impact on their overall score than for the UK. These weightings are reproduced in Table 2.4.

Table 2.2: Disaggregated scores for EU electricity markets (preliminary 2002 dataset)

	Austria	Finland	Italy	Sweden	Spain	UK
Upstream market	8.6	8.5	3.5	3.0	3.2	8.6
Wholesale market	8.7	10.0	0.0	10.0	10.0	9.9
Downstream supply	6.9	8.2	0.7	8.6	1.6	8.4
Score—all competitive areas	8.0	8.8	1.4	7.1	4.9	8.9
Network-related activities	8.0	8.0	8.0	8.0	8.0	9.9
Score—non-competitive area	8.0	8.0	8.0	8.0	8.0	9.9
Overall electricity score	**8.0**	**8.6**	**3.4**	**7.4**	**5.8**	**9.2**

Source: DTI (2003).

[3] To minimise the level of data collection required to undertake the PSA target analysis, the original methodology identified several high-level indicators—the initial filters—that were necessary for a market to be considered competitive. Only if countries passed this initial filtering did they progress to the detailed indicator analysis and ranking stage.

[4] The methodology used to calculate these scores is set out in OXERA's previous paper for the DTI, pp. 20–33.

Table 2.3: Disaggregated scores for EU gas markets (preliminary 2002 dataset)

	Austria	Finland	Italy	Sweden	Spain	UK
Upstream market	0.0	0.0	0.0	0.0	2.0	4.0
Wholesale market	7.9	5.0	0.0	0.0	7.9	9.9
Downstream supply	1.2	0.0	2.3	0.3	0.7	4.4
Score—all competitive areas	**3.0**	**1.7**	**0.7**	**0.1**	**3.5**	**6.0**
Network-related activities	8.5	3.0	7.5	7.5	8.5	9.9
Score—non-competitive area	**8.5**	**3.0**	**7.5**	**7.5**	**8.5**	**9.9**
Overall gas score	**4.7**	**2.1**	**2.8**	**2.3**	**5.0**	**7.2**

Source: DTI (2003).

Table 2.4: Aggregated scores for EU energy markets (preliminary 2002 dataset)

	Austria	Finland	Italy	Sweden	Spain	UK
Electricity market score	8.0	8.6	3.4	7.4	5.8	9.2
Gas market score	4.7	2.1	2.8	2.3	5.0	7.2
Relative gas market size	0.6	0.4	0.7	0.1	0.5	0.7
Weighted energy market score	**6**	**6.1**	**2.9**	**7.0**	**5.4**	**7.7**

Source: DTI (2003).

3. Confirming the 2002 PSA Rankings

As discussed, the results reproduced in section 2 were based on an incomplete dataset; therefore, to confirm the ranking, the dataset had to be revisited and updated to reflect more closely the actual state of the markets in 2002. (These data inadequacies apply only to the detailed indicator set and do not affect the countries passing the initial filter.) This section describes the extent of the data inadequacies and provides information on where alternative sources of information have become available, enabling the dataset to be updated.

Having established the dataset, the revised scores and rankings for 2002 are presented, together with a comparison between the preliminary 2002 and the final 2002 rankings.

3.1 Revisions to the 2002 dataset

At the time of publication in 2003, there were several data sources which were either unavailable—for example, market shares of each of the three largest suppliers in the domestic and industrial and commercial (I&C) retail markets—or which were only available for previous years (usually 2001, but, in some cases, 2000).

These inadequacies arose mainly as a consequence of three factors:

- *the immaturity of the markets themselves*—regulators or governments had yet to establish full market monitoring or information-gathering processes to enable the type of information required to be provided;
- *lags in regulatory reporting schedules*—which prevented the most recent information from being published on a timely basis;
- *commercial confidentiality of some of the data required*—certain data on market shares had been cited as commercially confidential and therefore unable to be disclosed, which may also be partly reflected in the manner in which publicly reported information is presented. For example, the European Commission benchmarking studies present only the sum of the market shares of the top three companies rather than company-specific figures.

Most affected by these factors were Italy and Spain, although no country had a complete set of data by the time the OXERA report was published. In the UK's case, this may in part be explained by a desire in the initial modelling to use consistent sources (thereby avoiding discussions on comparability of data), and the main Europe-wide summaries had several out-of-date figures. The extent of the data problems can be seen in Tables 3.1 and 3.2, which show, for electricity and gas, the adjustments that have been made to the detailed indicators in creating the final 2002 dataset for use in this section.

Each table differentiates between data which:

- was correct (ie, referred to the 2002 position) at the time of the previous report;
- has been updated from pre-2002 data used in the preliminary assessment; and
- is still unavailable for 2002 from publicly available sources.

As can be seen, in the electricity dataset, no country had a complete 2002 dataset at the time of the last report; only Finland had a complete dataset for gas.[5] The revisions to the datasets now provide a much more complete picture of 2002. However, there are still areas where data remains unavailable.

In electricity, the most notable gaps occur in the retail market shares and some of the generation market shares. In generation, output shares are often more quoted than capacity shares, whereas in the retail markets, the data used is that from the previous analysis, drawing on the European Commission's pan-European benchmarking studies. This data, although consistent, also fails to differentiate between domestic and I&C markets, hence an imperfect assumption is used that the same market structure applies across both segments. Where new information has become available, this is usually taken from regulatory reports or company annual reports and is more likely to provide market segmentation.

For gas, the updating has been more comprehensive, with only one country, Austria, still having some ranking determined according to 2001 data.

[5] The completeness of the Finnish gas market dataset is due to the country having a derogation from the EC Directives, and therefore having no competition in that part of the market.

Table 3.1: 2002 electricity update

Indicator	Austria	Finland	Italy	Spain	Sweden	UK
Upstream market						
Market share of the largest generator						
Market share of the two largest generators						
Market share of the three largest generators						
Degree of technical openness of market						
Openness of allocation mechanism to import capacity						
Wholesale market						
Existence of price reporting						
Share of total (daily) volume traded covered by price reporting						
Existence of standardised contracts						
Downstream supply						
I&C						
Degree of supply market opening						
Market share of largest supplier						
Market share of two largest suppliers						
Market share of three largest suppliers						
Annual gross switching since start of liberalisation						
Domestic						
Degree of supply market opening						
Market share of largest supplier						
Market share of two largest suppliers						
Market share of three largest suppliers						
Annual gross switching since start of liberalisation						
Network-related activities						
Unbundling at transmission level						
RTPA at transmission level						
Unbundling on distribution network level						
RTPA at distribution level						

Note: rTPA, regulated third-party access.

Key:

Correct in preliminary 2002 report =

2001 data is latest available =

2002 update =

Source: OXERA.

Table 3.2: Gas 2002 updated version

Indicator	Austria	Finland	Italy	Spain	Sweden	UK
Upstream market						
Market share of the largest shipper						
Market share of the two largest shippers						
Market share of the three largest shippers						
Wholesale market						
Existence of price reporting						
Share of total (daily) volume traded covered by price reporting						
Existence of standardised contracts						
Downstream supply						
I&C						
Degree of supply market opening						
Market share of largest supplier						
Market share of two largest suppliers						
Market share of three largest suppliers						
Domestic						
Degree of supply market opening						
Market share of largest supplier						
Market share of two largest suppliers						
Market share of three largest suppliers						
Annual gross switching since start of liberalisation						
Network-related activities						
Unbundling at transmission level						
RTPA at transmission level						
Unbundling on distribution network level						
RTPA at distribution level						
Competitive access to gas storage						

Key:

Correct in preliminary 2002 report =

2001 data is latest available =

2002 update =

Source: OXERA.

The main source of information for the preliminary ranking was the European Commission's annual 'Benchmarking Report on the Implementation of the Internal Electricity and Gas Market'. Having researched international sources for worldwide or European-level compendiums that might be available, and having spoken with national governments, regulators, industry associations and

statistical offices, it was acknowledged that this provided the most consistent dataset for both the initial filter analysis and the detailed market information.

The first two editions of the Commission's annual benchmarking report had provided the level of opening in each market and the status with regard to the initial filtering criteria. The second report was published in October 2002 and a revised edition in April 2003. This revised report contained final updated results of the Commission's second benchmarking exercise, as well as preliminary results for candidate countries for which a limited amount of information had been collected during 2002. A comparison of the figures in this report led to a number of changes to the original 2002 dataset.

Also in 2003, Eurostat released an updated version of its publication, 'Competition Indicators in the Electricity Market', covering the EU, Norway and candidate countries. This report enabled figures to be updated with 2001 data, the most recent that Eurostat has available (the previous edition of the report had data for 1999 and 2000). Data from national energy regulators and relevant government departments helped to fill any remaining gaps.

Some indicators required checking for availability and for any new national announcements that could have altered their situation since the last report. These remained unchanged from the preliminary 2002 findings.

The electricity indicators were updated to 2002 using a combination of European Commission and Eurostat sources, with the proviso that the most recently available Eurostat data was from 2001. Where available, national reports with 2002 data, such as Ofgem's 'Domestic Competitive Market Review', were used instead.

With regard to updating the gas indicators for 2002, the benchmarking report was able to provide confirmation of the market share of shippers, switching rates, the degree of supply-market opening, and the existence, or lack thereof, of network-related activities, including unbundling and rTPA. To ascertain the market share of the largest suppliers, it was necessary to check with the national regulators, IEA country reports, and, in some cases, individual companies. Where available, domestic and I&C market shares have been listed separately. Using these sources, it was possible to identify 2002 market shares, with the exception of Austria for which only 2001 data was available. For the UK, Ofgem's review of non-domestic gas and electricity contained data on the shares of largest three suppliers.

The details of the values of the indicators and the sources from which these were provided are contained in the technical appendices to this document. In comparison with the 2003 report, there has been a greater emphasis on individual regulator or company reports than was previously the case, reflecting the lack of appropriate disaggregation in some elements of the prior sources and/or recent updating. However, it is unclear whether these new sources will continue to produce regular updates on market information, although this is likely for most national regulators.

3.2 Final 2002 rankings

Using the revised dataset, a final 2002 PSA ranking was calculated. The following sub-sections detail the impact that this new information has had on the scores and rankings in each of the sub-markets (electricity and gas), together with the implications for the attainment of the 2002 PSA target. A comparison with the preliminary 2002 position is provided in section 3.3.

3.2.1 Electricity market competitiveness

Table 3.3 presents the scores achieved by each of the countries in the main segments of the detailed indicators. The overall electricity score is also shown in Figure 3.1. These figures confirm that the UK has the most competitive electricity market, as was the case in the preliminary report. Table 3.3 further illustrates that by far the most important differences between the countries emerge in the structures of their generation and supply markets. Where the UK, Austria and Finland had relatively unconcentrated generation markets in 2002 (with scores around 8.6), the remaining countries were penalised for a high degree of market concentration, scoring between 3.4 and 4.4.

In the retail markets, most notably in Spain and Italy, the relatively early stages of liberalisation meant that the dominance of the incumbent firms, especially in the regulated sector, remained. For example, in 2002, Italy's largest supplier had 60% of the market, whereas in Finland the largest supplier was reported to have a 12% market share.

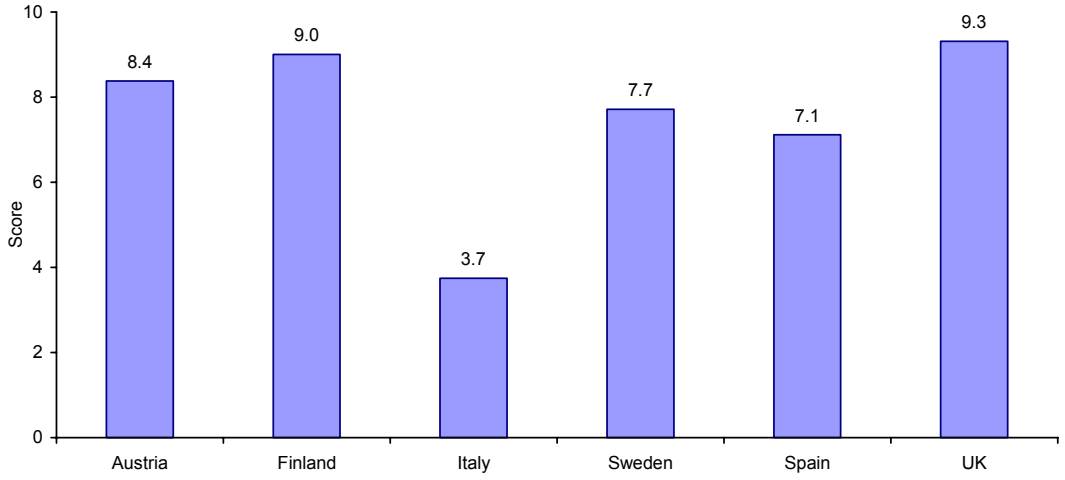
Despite a more consistent position in the network components, the lack of distribution network unbundling in several countries is still considered a hindrance to competition.

Table 3.3: Disaggregated scores for selected EU electricity markets (final 2002)

	Austria	Finland	Italy	Sweden	Spain	UK
Upstream market	8.6	8.6	3.8	4.4	3.4	8.7
Wholesale market	8.7	10.0	0.0	10.0	10.0	10.0
Downstream supply	8.6	10.0	2.0	8.6	4.4	8.6
Score—all competitive areas	**8.5**	**9.4**	**1.9**	**7.6**	**5.9**	**9.0**
Network-related activities	8.0	8.0	8.0	8.0	10.0	10.0
Score—non-competitive area	**8.0**	**8.0**	**8.0**	**8.0**	**10.0**	**10.0**
Overall electricity score	**8.4**	**9.0**	**3.7**	**7.7**	**7.1**	**9.3**

Source: OXERA.

Figure 3.1: Overall competitiveness scores for selected EU electricity markets (final 2002)



Source: OXERA.

3.2.2 Gas market competitiveness

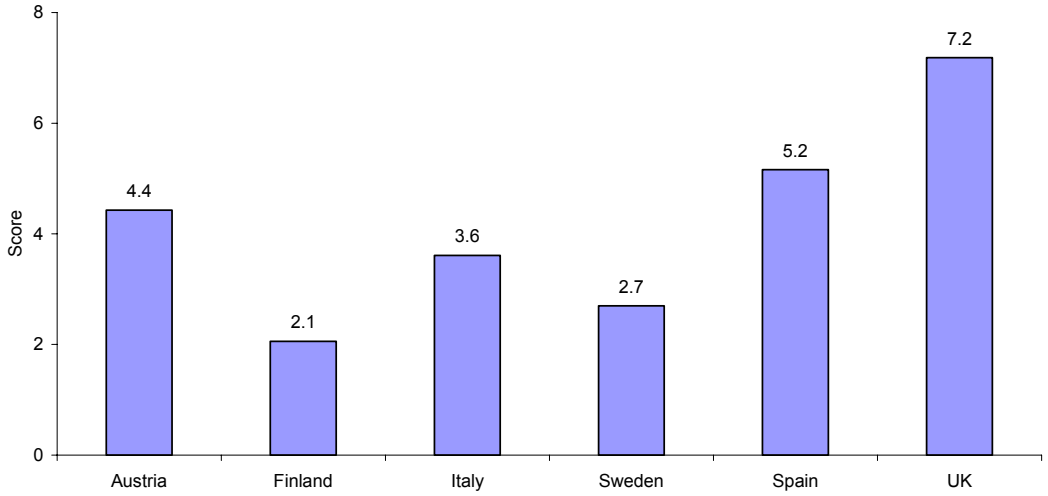
Table 3.4 presents the detailed scoring breakdown for the comparator countries in the gas market, with Figure 3.2 summarising the overall position. As was the case in the electricity market, the UK has the most competitive gas market, scoring significantly higher than Spain, which has the second most competitive market. The degree of openness at the shipping and wholesale level in the UK is by far the most important factor affecting the relatively high score. This is to be expected, as the other countries have, until recently, relied on a single incumbent importer/shipper to purchase and distribute gas.

Table 3.4: Disaggregated scores for selected gas markets (final 2002)

	Austria	Finland	Italy	Sweden	Spain	UK
Upstream market	0.0	0.0	0.0	0.0	0.0	4.0
Wholesale market	7.9	5.0	0.0	0.0	7.9	10.0
Downstream supply	0.2	0.0	4.6	0.0	1.5	4.1
Score—all competitive areas	2.7	1.7	1.5	0.0	3.1	6.0
Network-related activities	8.5	3.0	8.5	9.0	10.0	10.0
Score—non-competitive area	8.5	3.0	8.5	9.0	10.0	10.0
Overall gas score	**4.4**	**2.1**	**3.6**	**2.7**	**5.2**	**7.2**

Source: OXERA.

Figure 3.2: Overall competitiveness score for selected EU gas markets (final 2002)



Source: OXERA.

3.2.3 Overall energy market competitiveness

The final ranking, to be used in the PSA target assessment, is presented in Table 3.5 below. As can be seen, the UK retains its top ranking among the comparator group, confirming the preliminary conclusions from the 2003 report. Figure 3.3, which combines the analysis from Tables 3.3 to 3.5, also shows that electricity markets are more competitive than gas markets in every country. There is no one single reason why this should be the case, but contributory factors will include the earlier

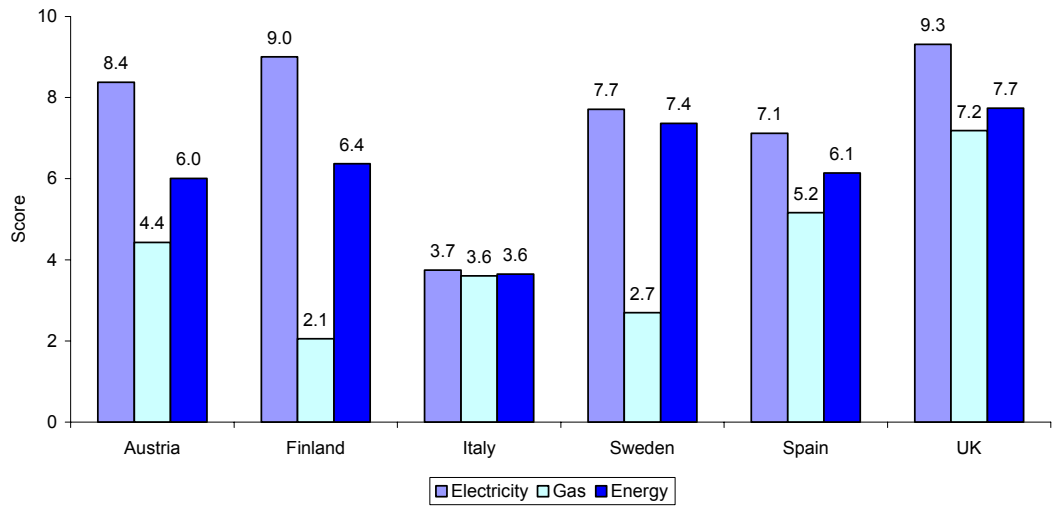
liberalisation in the electricity sector, the higher degree of import dependence in gas markets and the less rigid trading arrangements that exist for wholesale gas than for electricity in many countries.

Table 3.5: Ranking of selected EU energy markets (final 2002)

Country	Competitiveness score	Ranking
UK	7.7	1
Sweden	7.4	2
Finland	6.4	3
Spain	6.1	4
Austria	6.0	5
Italy	3.6	6

Source: OXERA.

Figure 3.3: Energy market scores for selected EU countries (final 2002)



Source: OXERA.

3.3 Comparison of preliminary and final scores

Whereas the revised dataset confirms the competitiveness of the UK market and the achievement of the PSA target, there have been some changes to the absolute scores for individual countries and to the minor rankings, as shown in Table 3.6. Interestingly, no score was adjusted downwards, although neither the UK nor Austria saw any increase in their scores. As a result, the UK's absolute score advantage over the other comparator countries fell: Sweden, the second-ranked country, rose from 7 to 7.4; and Austria dropped one place in the ranking to fifth, being overtaken by Spain.

The overall differences are driven by changes in the detailed indicators for each market. These are discussed in more detail below.

Table 3.6: Comparison of preliminary 2002 and final 2002 rankings and scores

	Preliminary 2002 score	Final 2002 score	Adjustment in score	Preliminary 2002 ranking	Final 2002 ranking	Adjustment in ranking
UK	7.7	7.7	0	1	1	no change
Sweden	7.0	7.4	+0.4	2	2	no change
Finland	6.1	6.4	+0.3	3	3	no change
Austria	6.0	6.0	0	4	5	–1
Spain	5.4	6.1	+0.7	5	4	+1
Italy	2.9	3.6	+0.7	6	6	no change

Source: OXERA.

3.3.1 Electricity indicator comparison

Table 3.7 compares the preliminary 2002 scores of selected countries' electricity markets with their final 2002 scores.

Table 3.7: Comparison of preliminary 2002 and final 2002 scores for electricity

	Preliminary 2002 score	Final 2002 score	Adjustment in score
UK	9.2	9.3	+0.1
Finland	8.6	9.0	+0.4
Austria	8.0	8.4	+0.4
Sweden	7.4	7.7	+0.3
Spain	5.8	7.1	+1.3
Italy	3.4	3.7	+0.3

Source: OXERA.

All countries' scores improve from the preliminary 2002 calculation to the final 2002 calculation. For some, this is due to expected improvements in performance as the impact of liberalisation on previously regulated market structures is felt. In other cases (eg, the UK), the use of more disaggregated and up-to-date data has had incremental effects on several components of its score. Country-by-country changes are highlighted below.

- **UK**—the score changed very little, increasing by 0.1 between the preliminary 2002 and final 2002 calculation. This was due to minor changes in its scores across all market areas. Importantly, differentiated retail market shares were provided and the generation capacity figures were updated using OXERA's generation database.
- **Spain**—an improvement of 1.3, driven by two main factors: the increase in market opening in the I&C market and the full opening of the domestic market; and the introduction of unbundling at the distribution level making network-related activities more competitive.
- **Austria**—an improvement of 0.4 due to more up-to-date data on supplier market shares showing lower levels of market concentration and higher levels of domestic switching than had previously been reported.
- **Finland**—also an improvement of 0.4, due to updated data, which shows higher I&C and domestic customer switching rates.
- **Sweden**—an increase of 0.3, caused by lower levels of market concentration in generation than had previously been reported.

- **Italy**—also increased by 0.3, due to lower scores in both the upstream and downstream markets as market concentration had decreased.

Overall, the main elements of updated data that drive the changes from the preliminary 2002 calculation to the final 2002 calculation are:

- supplier market shares—Italy, Austria;
- generator market share—Sweden, Italy;
- supply-market opening—Spain;
- unbundling at the distribution level—Spain;
- customer switching rates—Austria, Finland.

3.3.2 Gas indicator comparison

Table 3.8 compares the preliminary 2002 scores of selected countries' gas markets with their final 2002 scores.

Table 3.8: Comparison of preliminary 2002 and final 2002 scores for gas markets

	Preliminary 2002 score	Final 2002 score	Adjustment in score
UK	7.2	7.2	0
Spain	5.0	5.2	+0.2
Austria	4.7	4.4	–0.3
Italy	2.8	3.6	+0.8
Sweden	2.3	2.7	+0.4
Finland	2.1	2.1	0

Source: OXERA.

While there was no change in score for the UK and Finland, Austria's score decreased slightly by 0.3. Conversely, Spain, Sweden and Italy experienced increases of 0.2, 0.4 and 0.8 respectively.

- **Italy**—its improved performance was primarily driven by the opening up of its domestic market, which increased the indicator score in competitive areas.

- **Sweden**—the improvement reflects the introduction of rTPA at the distribution level; however, the full positive effect of this on Sweden's gas score was offset by consolidation in the downstream supply market.

- **Austria**—the decrease was a consequence of greater concentration in the downstream market, with the share of Austria's largest supplier rising from 70% to 90%.

- **Spain**—the increase in competitiveness was largely a function of improved network access conditions, including access to storage facilities, and a reduction in market concentration in supply due to the emergence of new, disaggregated data from the Spanish regulator.

4. Preliminary 2003 Rankings

Having confirmed the competitiveness rankings for 2002, the focus of the remainder of this report is the application of the methodology to determine whether the PSA target has been achieved in 2003. There are three stages to this analysis that, again, must apply the initial filter to determine which countries require data on the detailed indicators to be collected:

Stage 1: construction of the US and Canadian composite comparators, using the same techniques applied in the 2003 report;
Stage 2: assessment of the initial filter criteria for all the countries and composites; and
Stage 3: calculation of the detailed indicator scores and rankings.

The construction of the composite indicators is described in the technical appendices in order to allow this main report to focus on the broad results for the 2003 PSA target.

4.1 Application of initial filter

The initial filter is based on countries achieving the following conditions in one or both of their energy markets:

- full supply liberalisation;
- transmission network unbundling; and
- rTPA at the transmission level.

In addition, since some of the countries passing on this basis may have only one market that is fully open, those countries with an average degree of market opening that is greater than that of the initial filter group will also be included in the detailed analysis (provided that they comply with the two other filter conditions).

The results of the application of the initial filter are presented in Tables 4.1 and 4.2 for electricity and gas respectively. Although several countries have improved their degree of market opening in either or both the gas and electricity markets, only Denmark is added to the group of countries analysed for the 2002 PSA target. This is because the threshold for selection on an average opening basis (see Table 4.3) is now 90% (maintaining the same criterion regarding the inappropriate use of Finland as a cut-off and therefore using Italy, once more, as the benchmark). Thus, although Belgium and Ireland have improved significantly, they do not pass the filter.

Table 4.1: Ranking of PSA countries—electricity

Electricity market	Degree of market opening (%)	Transmission unbundling	rTPA	Selected as relevant comparator
Countries passing the network-related filters with 100% market opening				
Austria	100	✓	✓	✓
Denmark	100	✓	✓	✓
Finland	100	✓	✓	✓
Spain	100	✓	✓	✓
Sweden	100	✓	✓	✓
UK aggregate	100	✓	✓	✓
Countries passing the network-related filters with less than 100% market opening (ranked according to degree of market opening)				
Belgium	80	✓	✓	×
Italy	66	✓	✓	×
Netherlands	63	✓	✓	×
Luxembourg	57	✓	✓	×
Ireland	56	✓	✓	×
Portugal	45	✓	✓	×
France	37	✓	✓	×
Greece	34	✓	✓	×
US composite	30	✓	✓	×
Countries not passing the network-related filters				
Germany	100	✓	×	×
Canada composite	39.9	×	✓	×
Japan	30[1]	×	✓	×

Note: [1] This is an approximate figure. The Japanese electricity market is open to those with annual consumption in excess of 2 MW.
Source: Policy Planning Division, Electricity and Gas Industry Department, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry (METI), and press coverage.

Table 4.2: Ranking of PSA countries—gas

Gas market	Degree of market opening (%)	Transmission unbundling	rTPA	Selected as relevant comparator
Countries passing the network-related filters with 100% market opening				
Austria	100	✓	✓	✓
Denmark	100	✓	✓	✓
Italy	100	✓	✓	✓
Spain	100	✓	✓	✓
UK aggregate	100	✓	✓	✓
Countries passing the network-related filters with less than 100% market opening (ranked according to degree of market opening)				
Ireland	85	✓	✓	×
Belgium	83	✓	✓	×
Luxembourg	72	✓	✓	×
Netherlands	60	✓	Hybrid	×
US composite	56	✓	✓	×
Sweden	51	✓	✓	×
France	37	✓	✓	×
Countries not passing the network-related filters				
Germany	100	✓	×	×
Canada composite	95.2	×	✓	×
Japan	38.9[1]	×	✓	×
Derogations				
Finland	–	–	–	×
Greece	–	–	–	×
Portugal	–	–	–	×
Northern Ireland	–	–	–	×

Note: [1] The Japanese gas market is open to those consuming in excess of 1m cubic metres per annum. *Source*: Policy Planning Division, Electricity and Gas Industry Department, Agency for Natural Resources and Energy, METI and press coverage.

Table 4.3: Average degree of energy market opening

Country	Degree of market opening (%)		Gas consumption (TWh)[1]	Electricity consumption (TWh)[1]	Relative weight of gas market[2]	Average degree of market opening
	Electricity	Gas				
Austria	100	100	84.1	56.8	0.60	100
Belgium	80	83	170.8	84.5	0.67	82.0
Denmark	100	100	51.9	34.6	0.60	100
Finland	100	Derogation	47.8	79.1	0.38	62.3
France	37	37	487.2	441.3	0.52	37
Germany	100	100	940.3	549.2	0.63	100
Greece	34	Derogation	21.2	49.6	0.30	23.8
Ireland	56	85	46.3	22.1	0.68	75.6
Italy	66	100	753.7	301.8	0.71	90.3
Luxembourg	57	72	9.9	6.8	0.59	65.9
Netherlands	63	60	469.9	104.4	0.82	60.5
Portugal	45	Derogation	29.2	41.1	0.42	26.3
Spain	100	100	212.0	209.5	0.50	100
Sweden	100	51	11.3	138.9	0.07	96.3
UK aggregate	100	100	1,040.8	358.3	0.74	100

Source: Policy Planning Division, Electricity and Gas Industry Department, Agency for Natural Resources and Energy, METI and press coverage.

Therefore, a dataset for 2003 is required for the detailed indicators in each of the following countries:

- UK;
- Sweden;
- Finland;
- Spain;
- Austria;
- Italy; and
- Denmark.

4.2 Creation of 2003 dataset

Tables 4.4 and 4.5 set out the status of the preliminary 2003 datasets for electricity and gas respectively. The light (blue) shading indicates that no more up-to-date information is available since the final 2002 calculation (or that the information has not changed since then, which is the case for many of the network-related activities). The dark (blue) shading indicates that updated data was available since the final 2002 calculation. The medium (blue) shading indicates that data remains based on the year 2001.

Once more, the lack of information is more pronounced in the electricity market than in the gas market, although in general, the accuracy and relevance of the data are improving.

Table 4.4: 2003 electricity update

Indicator	Austria	Finland	Italy	Spain	Sweden	UK	Denmark
Upstream market							
Market share of the largest generator							
Market share of the two largest generators							
Market share of the three largest generators							
Market concentration							
Degree of technical openness of market							
Openness of allocation mechanism to import capacity							
Wholesale market							
Existence of price reporting							
Share of total (daily) volume traded covered by price reporting							
Existence of standardised contracts							
Downstream supply							
I&C							
Degree of supply market opening							
Market share of largest supplier							
Market share of two largest suppliers							
Market share of three largest suppliers							
Market concentration							
Annual gross switching since start of liberalisation							
Domestic							
Degree of supply market opening							
Market share of largest supplier							
Market share of two largest suppliers							
Market share of three largest suppliers							
Market concentration							
Annual gross switching since start of liberalisation							
Network-related activities							
Unbundling at transmission level							
RTPA at transmission level							
Unbundling on distribution network level							
RTPA at distribution level							

Key:

- Updated from 2002 report
- 2001 data is latest available
- Unchanged from 2002

Source: OXERA.

Table 4.5: 2003 gas update

Indicator	Austria	Finland	Italy	Spain	Sweden	UK	Denmark
Upstream market							
Market share of the largest generator							
Market share of the two largest generators							
Market share of the three largest generators							
Market concentration							
Wholesale market							
Existence of price reporting							
Share of total (daily) volume traded covered by price reporting							
Existence of standardised contracts							
Downstream supply							
I&C							
Degree of supply market opening							
Market share of largest supplier							
Market share of two largest suppliers							
Market share of three largest suppliers							
Market concentration							
Annual gross switching since start of liberalisation							
Domestic							
Degree of supply market opening							
Market share of largest supplier							
Market share of two largest suppliers							
Market share of three largest suppliers							
Market concentration							
Annual gross switching since start of liberalisation							
Network-related activities							
Unbundling at transmission level							
RTPA at transmission level							
Unbundling on distribution network level							
RTPA at distribution level							
Competitive access to gas storage							

Key:

Updated from 2002 report

Unchanged from 2002

Source: OXERA.

Delays in the publication of up-to-date information remain. The data that has been collated is taken from 2003 where possible; however, some indicators only have 2002 or even 2001 data available.

This is particularly the case with Eurostat, which produces a series of competition indicators on the European electricity market. From 2004, a similar publication on the gas market should also be published. While this should aid comparison between the two energy markets, the data lag will probably remain.

On a similar note, the European Commission benchmarking report provides a number of key figures for OXERA's indicators, although it does not make clear precisely when this data is taken from, stating that its aim is to 'provide a snapshot of the period July 2002–July 2003'. In addition, a lack of information consistency from the energy companies and regulatory authorities, which have different terminology and rules on pubic availability, make cross-country comparisons difficult. For example, many do not make a clear distinction between the domestic and I&C sectors in the supply market.

4.3 Preliminary 2003 PSA target results

Table 4.6 presents the preliminary results for 2003 based on the updated dataset, which reflects developments in the relevant energy markets in 2003 captured by the latest available data. The preliminary results confirm that the UK does meet the PSA target for 2003, having the most competitive electricity and gas markets in Europe. However, the 2003 preliminary scores show that the UK's lead in terms of competitiveness has narrowed significantly to 0.1 from 0.3, despite an overall improvement in its gas market performance and continued strong competitive position in the electricity market.

Table 4.6: Preliminary 2003 results

	Austria	Finland	Italy	Sweden	Spain	UK	Denmark
Electricity market score	8	9	4.3	8.3	6.9	9.2	8.6
Gas market score	4.6	1.2	3.1	3.0	5.2	7.6	2.8
Relative gas market size	0.6	0.38	0.71	0.07	0.5	0.74	0.6
Weighted energy market score	5.9	6.0	3.4	7.9	6.0	8.0	5.1

Source: OXERA.

As Table 4.7 shows, apart from the UK and Sweden, for the remaining countries there has been little change in the absolute scores from the 2002 PSA ranking. The reasons for are summarised in Table 4.8, with the following sub-sections providing more detail on the disaggregated scores and highlighting the changes over the final 2002 figures.

Table 4.7: Comparison of final 2002 and preliminary 2003 PSA target calculations

	Final 2002 score	Ranking	Preliminary 2003 score	Ranking
UK	7.7	1	8.0	1
Sweden	7.4	2	7.9	2
Finland	6.4	3	6.0	3=
Spain	6.1	4	6.0	3=
Austria	6.0	5	5.9	5
Italy	3.6	6	3.4	7
Denmark	n/a		5.1	6

Source: OXERA.

Table 4.8: Summary of major changes in indicators

Country	Electricity market	Gas market
UK	Increased concentration in domestic supply market due to TXU Energi/Powergen merger	
Austria	Increased concentration in generation market due to Verbund–EnergieAllianz merger	Reduction in shipper concentration Development of gas trading Consolidation in retail market
Finland	Increase in generation market concentration	
Spain	Increased concentration in I&C market	Increased concentration in shipping market
Italy	Full retail market opening	Higher concentration in shipper and retail market than previously assumed
Sweden	Distribution unbundling	Reduction in shipper and retail market concentration

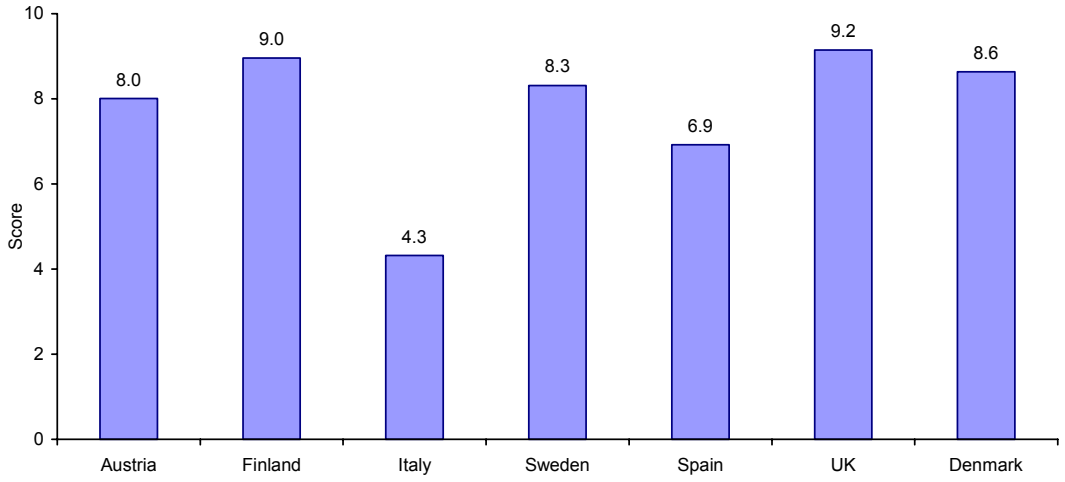
Source: OXERA.

4.3.1 Electricity market indicators

Figure 4.1 shows the overall competitiveness scores for those EU electricity markets that passed the initial filter in 2003. Figure 4.2 disaggregates the scores into both competitive and non-competitive areas, while Table 4.9 shows the detailed scores in the four market areas.

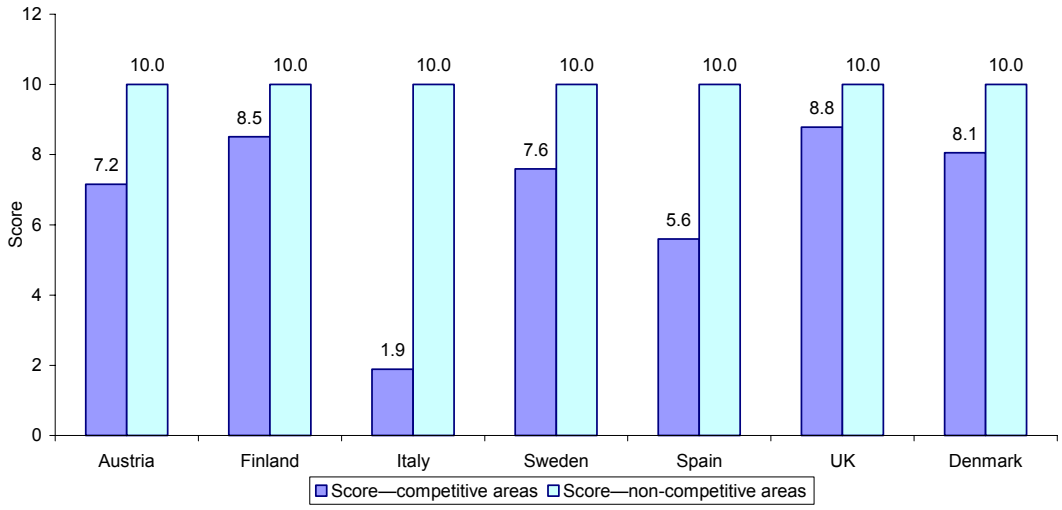
What is important is that the position in the non-competitive areas is now consistent across all the countries, with the main differences therefore arising solely due to variations in the underlying market structures in generation and/or retail supply.

Figure 4.1: Overall competitiveness scores for selected EU electricity markets (preliminary 2003)



Source: OXERA.

Figure 4.2: Disaggregated scores for selected EU electricity markets (preliminary 2003)



Source: OXERA.

Table 4.9: Disaggregated scores for selected EU electricity markets (preliminary 2003)

	Austria	Finland	Italy	Sweden	Spain	UK	Denmark
Upstream market	4.4	5.8	3.8	4.4	3.3	8.7	4.4
Wholesale market	8.7	10.0	0.0	10.0	10.0	10.0	10.0
Downstream supply	8.6	10.0	1.9	8.6	3.7	7.9	10.0
Score—all competitive areas	**7.2**	**8.5**	**1.9**	**7.6**	**5.6**	**8.8**	**8.1**
Network-related activities	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Score—non-competitive area	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**
Overall electricity score	**8.0**	**9.0**	**4.3**	**8.3**	**6.9**	**9.2**	**8.6**

Source: OXERA.

Interestingly, where there have been changes since 2002, the score in the competitive segments of the markets has, in all cases, declined or stabilised, as illustrated on a country-by-country basis in Tables 4.10 to 4.15. These tables present the disaggregated scores for each country, comparing the final 2002 scores against the preliminary 2003 scores and identifying any changes.

UK

Table 4.10 shows that the UK electricity score has fallen from 9.3 to 9.2 when comparing the final 2002 and preliminary 2003 scores. The table shows that this was caused by a lower score in the competitive area of the market—namely downstream supply—where the score fell from 8.6 to 7.9. This was driven mainly by increased consolidation in the domestic retail market through Powergen's acquisition of TXU Energi (giving Powergen the largest share of the supply market—its share in September 2003 was 23% compared with 8% a year earlier).

Table 4.10: Comparison of final 2002 score with preliminary 2003 score—UK electricity

	Final 2002	Preliminary 2003
Upstream market	8.7	8.7
Wholesale market	10.0	10.0
Downstream supply	8.6	7.9
Score—all competitive areas	**9.0**	**8.8**
Network-related activities	10.0	10.0
Score—non-competitive area	**10.0**	**10.0**
Overall electricity score	9.3	9.2

Source: OXERA.

Sweden

Table 4.11 shows that Sweden's overall position improved between the two years, from 7.7 to 8.3, driven by a higher score in network-related activities. Competitiveness in the non-competitive area increased as a result of the introduction of unbundling at the distribution level. Other market areas retained the same score.

Table 4.11: Comparison of final 2002 score with preliminary 2003 score—Sweden electricity

	Final 2002	Preliminary 2003
Upstream market	4.4	4.4
Wholesale market	10.0	10.0
Downstream supply	8.6	8.6
Score—all competitive areas	**7.6**	**7.6**
Network-related activities	8.0	10.0
Score—non-competitive area	**8.0**	**10.0**
Overall electricity score	7.7	8.3

Source: OXERA.

Italy

Table 4.12 shows that Italy's score increased by 0.6 from the final 2002 to preliminary 2003 calculation. As for Sweden, this was driven by a higher score in network-related activities, namely unbundling at the distribution level.

Table 4.12: Comparison of final 2002 score with preliminary 2003 score—Italy

	Final 2002	Preliminary 2003
Upstream market	3.8	3.8
Wholesale market	0.0	0.0
Downstream supply	2.0	1.9
Score—all competitive areas	**1.9**	**1.9**
Network-related activities	8.0	10.0
Score—non-competitive area	**8.0**	**10.0**
Overall electricity score	3.7	4.3

Source: OXERA.

Austria

Table 4.13 shows a reduction in Austria's electricity market score of 0.4 compared with the final 2002 score. Although Austria's network score increased, its competitive areas score fell from 8.5 to 7.2, offsetting what would have been an increase in competitiveness overall. This reduction in the competitive areas score was caused by significant consolidation in the generating market as Verbund and EnergieAllianz merged, increasing the concentration in the market and reducing the upstream market score from 8.6 to 4.4.

Table 4.13: Comparison of final 2002 score with preliminary 2003 score—Austria electricity

	Final 2002	Preliminary 2003
Upstream market	8.6	4.4
Wholesale market	8.7	8.7
Downstream supply	8.6	8.6
Score—all competitive areas	**8.5**	**7.2**
Network-related activities	8.0	10.0
Score—non-competitive area	**8.0**	**10.0**
Overall electricity score	8.4	8.0

Source: OXERA.

Spain

Table 4.14 shows that Spain's performance worsened, mainly owing to a lower score in both the upstream market and downstream supply. The upstream market fall was caused by a slight reduction in the degree of technical openness of the market to imports. The downstream supply fall was caused by an apparent increase in the concentration in the domestic supply market. In 2003, this data was available from the Spanish regulator, CNE, which provided supplier market-share information for domestic and I&C markets separately.[6] This increased the observed concentration in

[6] The data was actually defined according to regulated and unregulated tariff markets, but this was taken as a proxy for the domestic and I&C split.

the domestic supply market. This is a data issue rather than a consequence of additional consolidation in the market.

Table 4.14: Comparison of final 2002 score with preliminary 2003 score—Spain electricity

	Final 2002	Preliminary 2003
Upstream market	3.4	3.3
Wholesale market	10.0	10.0
Downstream supply	4.4	3.7
Score—all competitive areas	**5.9**	**5.6**
Network-related activities	10.0	10.0
Score—non-competitive area	**10.0**	**10.0**
Overall electricity score	7.1	6.9

Source: OXERA.

Finland

Table 4.15 shows that Finland's overall electricity competitiveness score did not change between the final 2002 and preliminary 2003 calculation. However, this apparent consistency masks changes that become apparent at the disaggregated level. In the non-competitive area, Finland's score increased as a result of the introduction of unbundling at the distribution level. Conversely, the competitive areas score fell, driven by a reduction in the upstream market score. This was caused by a substantial increase in the reported concentration in the generation market. Whereas previous data provided to the European Commission had suggested that the three largest generators in Finland accounted for less than one-quarter of generation, more recent information from the Finnish Energy Market Authority identified the largest generator as having a 40% market share, with the second-largest having 20%.

Table 4.15: Comparison of final 2002 score with preliminary 2003 score—Finland electricity

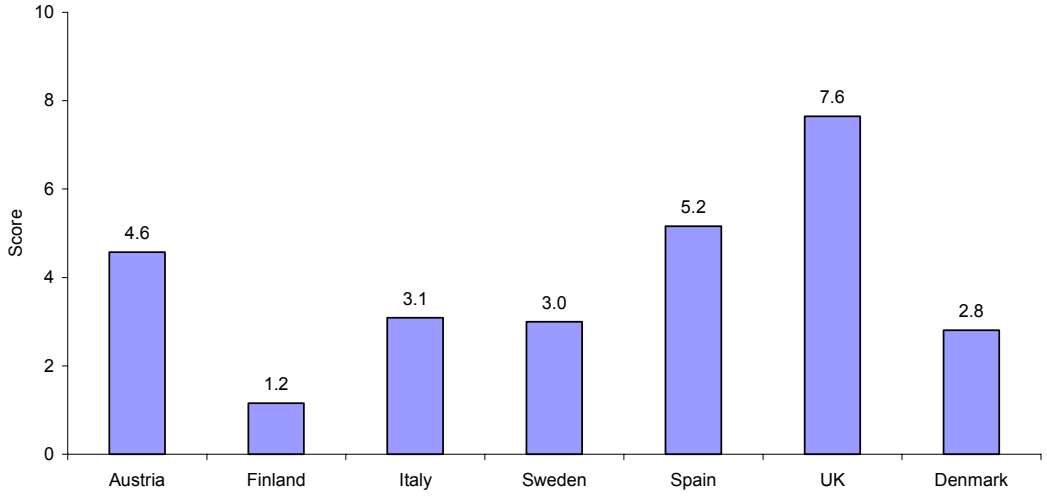
	Final 2002	Preliminary 2003
Upstream market	8.6	5.8
Wholesale market	10.0	10.0
Downstream supply	10.0	10.0
Score—all competitive areas	**9.4**	**8.5**
Network-related activities	8.0	10.0
Score—non-competitive area	**8.0**	**10.0**
Overall electricity score	9.0	9.0

Source: OXERA.

4.3.2 Gas market indicators

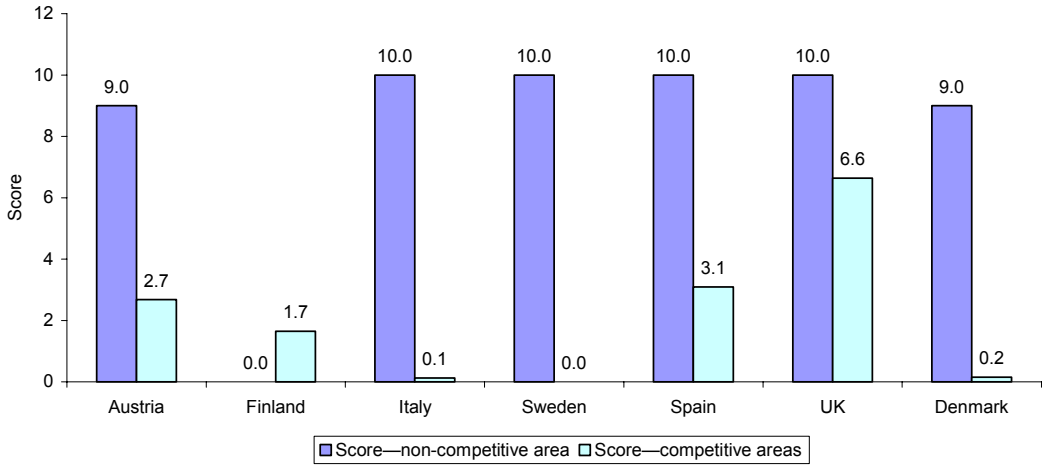
Figure 4.3 shows the overall competitiveness scores for the relevant gas markets. This overall score is disaggregated between competitive and network scores in Figure 4.4, with Table 4.16 reporting the detailed scores in the four market areas.

Figure 4.3: Overall competitiveness score for gas markets (preliminary 2003)



Source: OXERA.

Figure 4.4: Disaggregated scores for gas markets (preliminary 2003)



Source: OXERA.

Table 4.16: Disaggregated scores for gas markets (preliminary 2003)

	Austria	Finland	Italy	Sweden	Spain	UK	Denmark
Upstream market	0.0	0.0	0.0	0.0	0.0	6.0	0.0
Wholesale market	7.9	5.0	0.0	0.0	7.9	10.0	0.0
Downstream supply	0.2	0.0	0.4	0.0	1.5	4.1	0.5
Score—all competitive areas	**2.7**	**1.7**	**0.1**	**0.0**	**3.1**	**6.6**	**0.2**
Network-related activities	9.0	0.0	10.0	10.0	10.0	10.0	9.0
Score—non-competitive area	**9.0**	**0.0**	**10.0**	**10.0**	**10.0**	**10.0**	**9.0**
Overall gas score	**4.6**	**1.2**	**3.1**	**3.0**	**5.2**	**7.6**	**2.8**

Source: OXERA.

Table 4.16 shows that, using the preliminary 2003 dataset, the UK (with a score of 7.6) has the most competitive gas market of those countries passing the initial filter. It is followed, at some distance, by Spain (5.2) and Austria (4.6). Finland has the least competitive gas market (1.2), which is to be expected, given its derogation from the EC Directive. As in 2002, the analysis shows that the structure of the UK's market is much more competitive than that of the other countries. Once more, the changes in the overall scores for the countries are shown in Tables 4.17 to 4.22 below.

UK

Table 4.17 shows that the UK's score increased from 7.2 in the final 2002 calculation to 7.6 in the preliminary 2003 calculation. This was driven by a reduction in the upstream market concentration as new information on shipper market shares was made available, indicating a lower share for the largest shipper (around 25% compared with 50% in previous European Commission benchmarking reports).

Table 4.17: Comparison of final 2002 scores with preliminary 2003 score—UK gas

	Final 2002	Preliminary 2003
Upstream market	4.0	6.0
Wholesale market	10.0	10.0
Downstream supply	4.1	4.1
Score—all competitive areas	**6.0**	**6.6**
Network-related activities	10.0	10.0
Score—non-competitive area	**10.0**	**10.0**
Overall gas score	**7.2**	**7.6**

Source: OXERA.

Italy

The Italian position worsened, largely owing to greater consolidation in the downstream supply market, with significant increases in the reported market shares of the largest retail players.

Table 4.18: Comparison of final 2002 scores with preliminary 2003 score—Italy gas

	Final 2002	Preliminary 2003
Upstream market	0.0	0.0
Wholesale market	0.0	0.0
Downstream supply	4.6	0.4
Score—all competitive areas	**1.5**	**0.1**
Network-related activities	8.5	10.0
Score—non-competitive area	**8.5**	**10.0**
Overall gas score	**3.6**	**3.1**

Source: OXERA.

Sweden

Sweden's gas market changed relatively little over the year, but a more transparent regulatory regime for storage access was introduced in 2003, thereby improving the network access score.

Table 4.19: Comparison of final 2002 scores with preliminary 2003 score—Sweden gas

	Final 2002	Preliminary 2003
Upstream market	0.0	0.0
Wholesale market	0.0	0.0
Downstream supply	0.0	0.0
Score—all competitive areas	**0.0**	**0.0**
Network-related activities	9.0	10.0
Score—non-competitive area	**9.0**	**10.0**
Overall gas score	**2.7**	**3.0**

Source: OXERA.

Austria

Minor adjustments to the degree of unbundling at the distribution level have led to increased network scores for Austria.

Table 4.20: Comparison of final 2002 scores with preliminary 2003 score—Austria gas

	Final 2002	Preliminary 2003
Upstream market	0.0	0.0
Wholesale market	7.9	7.9
Downstream supply	0.2	0.2
Score—all competitive areas	**2.7**	**2.7**
Network-related activities	8.5	9.0
Score—non-competitive area	**8.5**	**9.0**
Overall gas score	**4.4**	**4.6**

Source: OXERA.

Finland

Table 4.21 shows that Finland's score decreased from 2.1 to 1.2 between the final 2002 calculation and preliminary 2003 calculation. This was potentially a function of incorrect information relating to the 2002 regime, where transmission access was reported in the European Commission benchmarking study as being on an rTPA basis, whereas the most recent 2003 benchmarking report states that it is not.

Table 4.21: Comparison of final 2002 scores with preliminary 2003 score—Finland

	Final 2002	Preliminary 2003
Upstream market	0.0	0.0
Wholesale market	5.0	5.0
Downstream supply	0.0	0.0
Score—all competitive areas	**1.7**	**1.7**
Network-related activities	3.0	0.0
Score—non-competitive area	**3.0**	**0.0**
Overall gas score	2.1	1.2

Source: OXERA.

5. International Price Comparisons

The evaluation process for the PSA target set out in this report focuses on market conditions conducive to the effective working of competition in national gas and electricity markets. At the same time, energy price levels are often used to make statements about the position of a given country relative to its competitors, or, in other words, about a country's 'competitiveness'. However, the relationship between energy price levels and effective competition in a country's energy markets is complex.

Effective competition is only one of the factors influencing energy price levels in a given country. The level of natural energy resources within a country, government policy, environmental targets, and taxation are only some of the additional factors that need to be taken into account to explain price levels and movements. Thus, energy prices in different countries can indicate a relative advantage of one country over another in terms of an important input factor in its economy. However, price levels cannot be taken as straightforward indicators of the competitive performance of national energy markets in the sense of the effective working of competitive market arrangements. As such, they should only be considered once all other, non-market-related, factors that influence their level and movement are stripped out.

Nevertheless, given the importance accorded to energy price comparisons when assessing the competitive position of a country in the international context, this section sets out levels of gas and electricity prices for the EU Member States and the USA, Canada and Japan. The following tables and figures give price comparisons, using data taken from the IEA report, 'Energy Prices and Taxes: First Quarter 2004', for the various countries considered in this study. Prices have been converted to pounds sterling from US dollars using the IEA's exchange-rate assumptions, as detailed in Table 5.1. All electricity prices are quoted per MWh in pounds sterling (2003). All gas prices have been converted from an average price per 10^7 kcal on a gross calorific value basis to pence per therm using the exchange rates listed below and a conversion factor of 25199.59 kcal/therm.

Table 5.1: US dollar to pound sterling exchange-rate assumptions

2000	2001	2002	2003
0.661	0.694	0.667	0.610

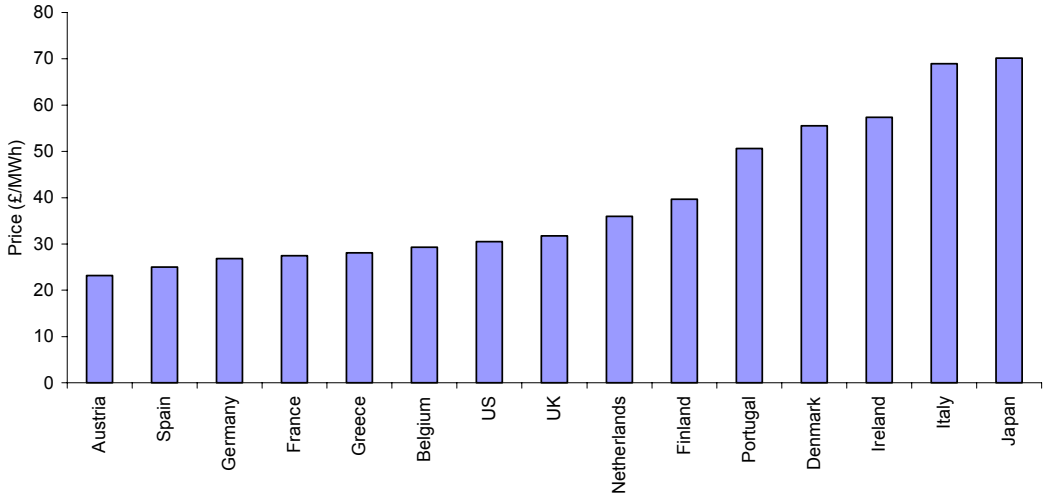
Source: IEA (2004), 'Energy Prices and Taxes, First Quarter 2004', section D, table 1.

Table 5.2: Electricity prices for industry (£/MWh)

Rank[1]	Country	2000	2001	2002	2003
1	Austria	25.12	26.37	25.35	23.18
2	Spain	28.42	28.45	27.35	25.01
3	Germany	27.10	30.54	29.35	26.84
4	France	23.80	24.29	24.68	27.45
5	Greece	27.76	29.84	30.68	28.06
6	Belgium	31.73	33.31	32.02	29.28
7	USA[2]	30.41	34.70	32.02	30.50
8	UK	36.36	35.39	34.68	31.72
9	Netherlands	37.68	40.95	39.35	35.99
10	Finland	25.78	26.37	28.68	39.65
11	Portugal	24.46	31.23	32.68	50.63
12	Denmark	38.34	41.64	46.69	55.51
13	Ireland	32.39	41.64	50.03	57.34
14	Italy	58.83	74.26	75.37	68.93
15	Japan	94.52	88.14	76.71	70.15
Unranked	Canada	n/a	n/a	n/a	n/a
Unranked	Luxembourg	n/a	n/a	n/a	n/a
Unranked	Sweden	n/a	n/a	n/a	n/a

Notes: n/a = data not available. Shaded figures relate to individual years where data is not available; in such cases, the figure used is the most recent available year (eg, 2000 for Austria), but adjusted for changes in exchange rates. [1] Rank refers to 2003 prices. [2] Prices exclude tax for the USA.
Source: IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

Figure 5.1: Electricity prices for industry in 2003 (£/MWh)



Source: Converted from IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

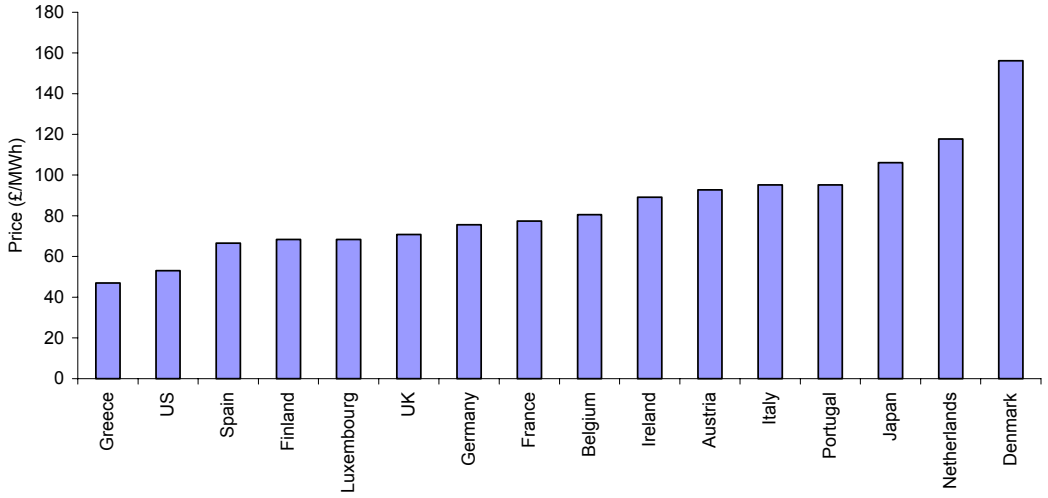
Of the countries studied, industrial electricity prices were highest in Japan and lowest in Austria in 2003. Prices in the UK were around the mid-range of EU countries' prices, at £31.72/MWh. Italy displayed the highest industrial electricity price in the EU.

Table 5.3: Electricity prices for households (£/MWh)

Rank[1]	Country	2000	2001	2002	2003
1	Greece	46.93	48.58	51.36	46.97
2	USA[2]	54.20	58.99	56.03	53.07
3	Spain	77.34	75.65	72.70	66.49
4	Finland	51.56	53.44	56.70	68.32
5	Luxembourg	65.44	68.01	74.70	68.32
6	UK	70.73	70.09	70.04	70.76
7	Germany	79.98	86.06	82.71	75.64
8	France	67.42	68.01	70.04	77.47
9	Belgium	87.25	91.61	88.04	80.52
10	Ireland	66.76	65.24	71.37	89.06
11	Austria	78.00	82.59	86.71	92.72
12	Italy	89.24	102.71	104.05	95.16
13	Portugal	79.32	81.89	84.71	95.16
14	Japan	141.45	130.47	116.06	106.14
15	Netherlands	86.59	106.88	103.39	117.73
16	Denmark	130.22	135.33	139.40	156.16
Unranked	Canada	n/a	n/a	n/a	n/a
Unranked	Sweden	n/a	n/a	n/a	n/a

Notes: n/a = data not available. Shaded figures relate to individual years where data is not available; in such cases, the figure used is the most recent available year (eg, 2001 for Spain), but adjusted for changes in exchange rates. [1] Rank refers to 2003 prices. [2] Prices exclude tax for the USA.
Source: IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

Figure 5.2: Electricity prices for households (£/MWh)



Source: Converted from IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

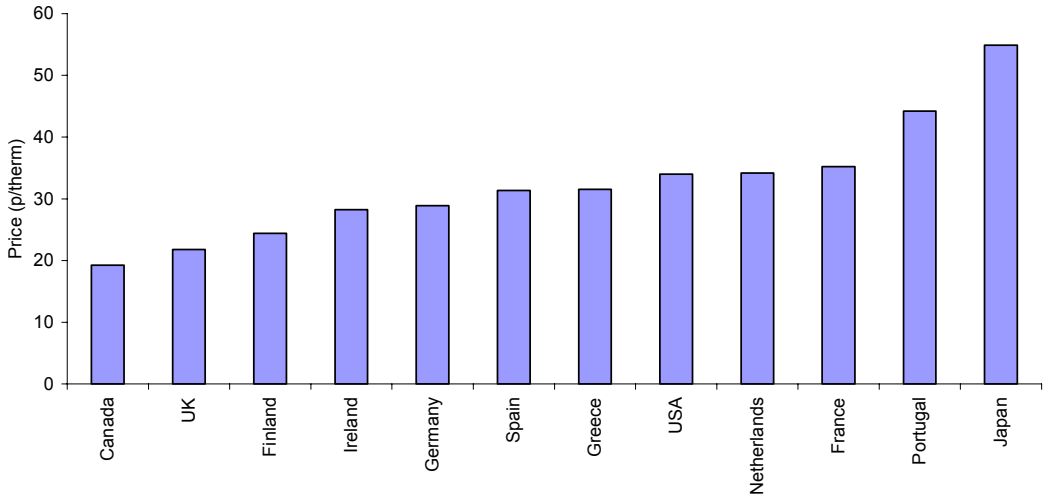
Of the EU Member States, domestic electricity prices were lowest in Greece and highest in Denmark in 2003. Prices in the UK were the sixth lowest, at £70.76/MWh.

Table 5.4: Gas prices for industry (p/therm)

Rank[1]	Country	2000	2001	2002	2003
1	Canada	14.96	19.03	21.06	19.26
2	UK	17.42	24.55	23.82	21.78
3	Finland	21.77	22.04	21.33	24.39
4	Ireland	19.02	25.10	30.89	28.25
5	Germany	31.30	32.86	31.58	28.88
6	Spain	29.22	30.78	27.82	31.36
7	Greece	36.00	35.89	34.49	31.54
8	USA	28.48	34.73	25.85	34.02
9	Netherlands	27.73	30.71	27.65	34.19
10	France	27.95	32.72	28.89	35.22
11	Portugal	n/a	n/a	40.02	44.21
12	Japan	75.41	71.07	60.01	54.88
Unranked	Austria	n/a	n/a	n/a	n/a
Unranked	Belgium	n/a	n/a	n/a	n/a
Unranked	Denmark	n/a	n/a	n/a	n/a
Unranked	Italy	n/a	n/a	n/a	n/a
Unranked	Luxembourg	n/a	n/a	n/a	n/a
Unranked	Sweden	n/a	n/a	n/a	n/a

Notes: n/a = data not available. Shaded figures relate to individual years where data is not available; in such cases, the figure used is the most recent available year (eg, 2002 for Canada), but adjusted for changes in exchange rates. [1] Rank refers to 2003 prices.
Source: IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

Figure 5.3: Gas prices for industry (p/therm)



Source: Converted from IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

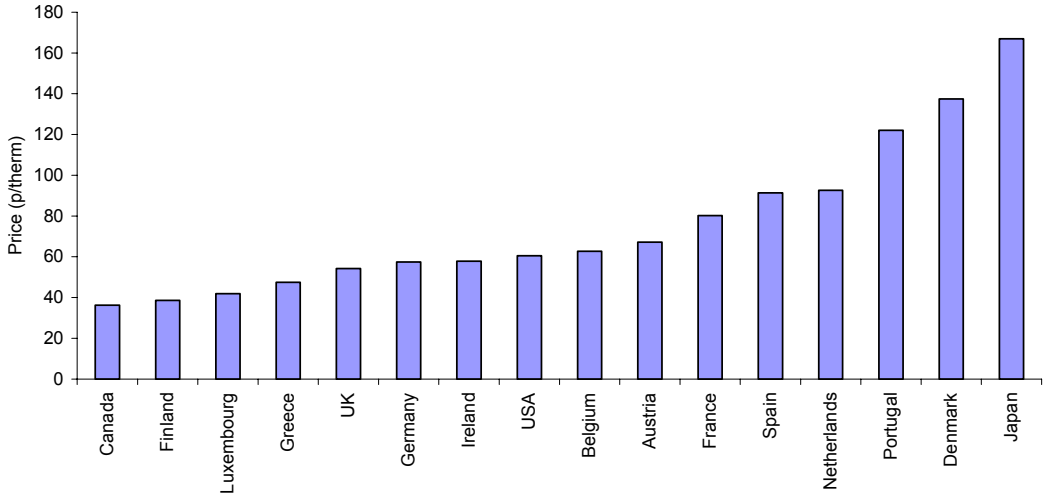
Of the countries for which data was available, gas prices to industrial consumers were cheapest in Canada in 2003. UK prices were second-lowest, at 21.78 p/therm. Japan had the highest industrial gas prices, at 54.88 p/therm. Of the EU Member States, Portugal had the highest gas price to industrial consumers.

Table 5.5: Gas prices for households (p/therm)

Rank[1]	Country	2000	2001	2002	2003
1	Canada	33.21	51.43	39.70	36.31
2	Finland	26.57	38.67	33.89	38.58
3	Luxembourg	45.91	52.50	45.84	41.92
4	Greece	47.84	53.99	51.89	47.45
5	UK	48.77	50.10	53.28	54.26
6	Germany	62.20	65.30	62.76	57.40
7	Ireland	57.60	61.73	63.23	57.83
8	USA	53.55	64.55	54.46	60.56
9	Belgium	67.91	71.30	68.53	62.67
10	Austria	58.03	64.45	63.75	67.13
11	France	57.88	70.43	71.54	80.18
12	Spain	81.85	88.82	83.52	91.34
13	Netherlands	59.86	70.20	76.83	92.60
14	Portugal	n/a	n/a	109.44	122.05
15	Denmark	122.48	124.03	121.04	137.48
16	Japan	215.56	204.30	182.60	167.00
Unranked	Italy	n/a	n/a	n/a	n/a
Unranked	Sweden	n/a	n/a	n/a	n/a

Notes: n/a = data not available. Shaded figures relate to individual years where data is not available; in such cases, the figure used is the most recent available year (eg, 2002 for Canada), but adjusted for changes in exchange rates. [1] Rank refers to 2003 prices.
Source: IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

Figure 5.4: Gas prices for households (p/therm)



Source: Converted from IEA (2004), 'Energy Prices and Taxes: First Quarter 2004'.

Of the countries studied, domestic gas prices were lowest in Canada in 2003. Among the EU Member States, domestic gas prices were highest in Denmark—over three times the prices in the cheapest EU Member State, Finland. Prices in the UK were the fifth-lowest, at 54.26 p/therm.

6. Conclusion

The purpose of this report has been twofold:

- to confirm the preliminary conclusion from the 2003 report that the DTI's energy competitiveness PSA target had been met in 2002; and
- to analyse whether the PSA target was met in 2003.

In both cases, the application of the original ranking methodology showed that the PSA target had been met and that, in each year, the UK had the most competitive electricity and gas markets among the EU and G7 countries.

The inclusion of detailed rankings and scores for both 2002 and 2003 provides some useful evidence on the nature and evolution of competition in energy markets and on the availability of the necessary market information for the application of the ranking methodology.

On the nature and evolution of competition, three main points are worth noting.

- *The degree of competition in gas markets is generally lower than that in electricity markets*. This may be a consequence of the shorter time since the implementation of the EC Directive in natural gas (August 2000) relative to that in electricity (February 1999). However, there are also likely to be issues relating to the supply chain for gas (eg, substantial import dependence and long-term contracting) that create greater obstacles to establishing a competitive market framework.

- *Future competitiveness assessments will focus more on the competitive areas of the market*—that is, the main barriers to non-discriminatory network access in both electricity and gas are being dealt with effectively through changes in legislation.

- *The competitive market indicators (ie, upstream, wholesale and downstream markets) will not necessarily improve year on year*. Merger and acquisition activity will still be possible, such as the acquisition of TXU Energi by Powergen or the Verbund–EnergieAllianz merger in Austria, which serves to increase market concentration and lower the ranking score. Nevertheless, such activity can be seen as a sign of an efficiently operating capital market and the justification for such mergers may not be solely on the grounds of competition.

With regard to data availability, the research for this report has shown that:

- more up-to-date information is becoming available for the majority of countries, with a primary source for recent data being the national regulators;
- the pan-European datasets, such as the annual European Commission benchmarking study, exhibit more consistency in the data provided (as they are compiled according to standard definitions). However, they also tend to be subject to longer time lags in reporting, and the information presented does exhibit some discrepancies with national data covering the same period, calling into question the validity of some of the information;
- market-share information is variable in quality and availability. In countries such as the UK, the I&C shares are not provided explicitly owing to commercial confidentiality, whereas in other countries there is often no distinction provided in the market share between different retail sectors.

Annex: Forward Ranking Projections

Although the UK has achieved the PSA target in both 2002 and 2003, the progress of liberalisation in other markets—in particular, the changes taking place in EU Member States to implement the requirements of the internal market Directives requiring full market opening by 2007—suggest that the PSA target may become harder to achieve in the future.

This annex looks at the likely trends in the UK's energy competitiveness score in the future and what developments in other countries would need to occur in order for the UK to lose its ranking within the top three countries and thus no longer comply with its PSA target.

The analysis is structured as follows:

- section A1.1 creates a range of plausible scenarios for the development of market indicators in the UK by 2008;
- section A1.2 assesses changes in the performance of the existing comparator group which would need to occur for the UK to fall out of the top three ranking, and considers the likelihood of this occurring;
- section A1.3 examines the expansion of the comparator group that may be expected and when this may occur, drawing on the announced liberalisation programmes among the EU15. It also assesses the potential impact of this on the competitiveness ranking of the UK;
- section A1.4 summarises the analysis and highlights the main risks for the UK.

A1.1 UK forward ranking projections

In both the electricity and gas sectors, the UK scored maximum points on the structure of the non-competitive, or network, area. There is no reason to expect that there will be a substantial change in the broad framework of network regulation in the UK, such that the main criteria are not met in the future for both gas and electricity. Consequently, the focus of the scenarios is on the competitive areas—ie, upstream, wholesale and downstream markets.

In developing the scenarios, different views of the factors affecting the evolution of market structures are considered, since it is the changes in the concentration in the upstream and downstream markets where the majority of the variability in competitiveness scores will occur, as already evidenced in the analysis of the 2002 and 2003 PSA targets. Thus, the incentives for entry and exit by new players, together with the prospects for mergers and acquisitions among existing players, are the key drivers. However, where further consolidation is assumed, the resultant market conditions are not such that they would automatically be considered anti-competitive by competition authorities.

The scenarios for electricity and gas market development are considered separately and an aggregated energy score is then derived using projected weights for the two markets.

A1.1.1 Electricity

The preliminary 2003 data, reproduced in Table A1.1 below, shows that, in the competitive market segments, the UK at present has a maximum score in the wholesale market and relatively high scores in the upstream and downstream supply markets. Likely changes over the period to 2008 are discussed in terms of two broad scenarios—an upside and a downside case—identifying those that may serve to increase or decrease the UK's score in the future.

Table A1.1: Summary of 2003 electricity ranking scores

High-level scores	Preliminary 2003
Upstream market	8.7
Wholesale market	10.0
Downstream supply	7.9
Score—all competitive areas	**8.8**
Network-related activities	10.0
Score—non-competitive area	**10.0**
Overall electricity score	**9.2**

Source: OXERA.

Upstream competition

The major driver of the upstream market score is the market concentration in the generation market. Over the past few years, there have been a number of significant changes of ownership in the generation market. Smaller independent power producers have been acquired by major vertically integrated players as the former faced financial constraints associated with the collapse in wholesale prices post-NETA and the latter looked to balance their portfolio of generation and supply. However, major generators have also decided to mothball or close plant, which has had an effect on the capacity shares of each generator.

The upside market scenario represents the current state of the market, where the market shares of the three major generators are lower than assumed at the beginning of 2003, largely due to closure decisions—indeed, there has been a change in the companies filling the top three positions. However, cross-shareholdings may mean that this under-represents each generator's actual call on capacity.

Underlying the scenario is the assumption that there is very limited new entry in the market up to 2008, and, where this does take place, the constructed plant is not owned by the major generators. In addition, the drive towards further capacity acquisition by the vertically integrated players slows as more balanced supply–demand portfolios are achieved. This does not preclude further acquisitions, but means that they do not affect the market shares of the top three generators.

Conversely, in the downside scenario, further consolidation is assumed to have an impact at the margin on the market shares of the largest generators, leading to a slight increase in market concentration over the upside market scenario. However, since market shares of the major suppliers are not expected to change significantly, this increment may only be of the order of 1% for the second- and third-largest generators.

The technical openness of the market may increase if the proposed new interconnector with Norway is constructed. This is included in the 2003 NGC Seven Year Statement at a rated capacity of 1,320 MW from 2006. For the purposes of this analysis, as there is no guarantee that this interconnector will reach construction phase during this timeframe, the downside assumes no new interconnector is operational by the end of this period, whereas the upside scenario assumes the Norwegian interconnector is fully operational from 2006.

Table A1.2: Upstream market scenarios

Indicator	Preliminary 2003	Upside	Downside
Market share of the largest generator	0.16	0.12	0.12
Market share of the two largest generators	0.29	0.21	0.22
Market share of the three largest generators	0.39	0.30	0.32
Degree of technical openness of market	0.03	0.05	0.03
Openness of allocation mechanism to import capacity	Auction	Auction	Auction

Source: OXERA.

Wholesale markets

The wholesale market indicators are not expected to alter to such an extent that they would have an adverse impact on the score in this area. There is, and is expected to remain, price reporting in the industry, and the volume of churn in the market is significantly greater than 1, implying that a large reduction in market liquidity would be required before traded volumes fell below 100% of daily generation. Furthermore, a large volume of trade continues to pass through standardised trading platforms, indicating that these contracts will persist throughout the period.

Table A1.3: Wholesale market scenarios

Indicator	Preliminary 2003	Upside	Downside
Price reporting	Y	Y	Y
Share of total (daily) volume traded covered by price reporting	>100%	>100%	>100%
Standardised contracts	Y	Y	Y

Source: OXERA.

Downstream competition

The downstream supply market has also seen consolidation over the last few years, with several mergers between former public electricity suppliers and the continued growth of Centrica's electricity supply business in the domestic market, largely driven by a strong position in the dual-fuel market, where Centrica has more than 40% of the market.[7]

At the end of 2003, the domestic market had a Herfindahl–Hirschmann Index (HHI) value of 1,756. The US Department of Justice guidelines on horizontal mergers indicate that any merger which results in an HHI of above 1,800 should be considered to have potentially anti-competitive effects and therefore be subject to a competition inquiry. Thus, on the domestic market, the downside case may be limited by possible competition considerations, although it has been assumed that:

- one further merger between the two smallest players is allowed to occur;
- the current market shares for the remaining incumbents stay the same;
- switching rates stagnate, making organic growth options less viable.

However, the upside case assumes that competition among existing players intensifies and customer switching increases as more customers take advantage of competitive offers. As a result, the market

[7] Ofgem (2004), 'Domestic Competitive Market Review', March.

evolves into a situation where there are six equal-sized competitors, each with around 17% of the market.

Limited changes are expected in the I&C market, where market competition is well established and there are fewer perceived entry barriers. The downside scenario, however, has incorporated some minor additional concentration that would serve to lower the UK's score by two points in this area.

Table A1.4: Downstream market scenarios

Indicator	Preliminary 2003	Upside	Downside
I&C market			
Degree of supply market opening	100%	100%	100%
Market share of largest supplier	0.22	0.20	0.22
Market share of two largest suppliers	0.43	0.40	0.44
Market share of three largest suppliers	0.54	0.55	0.59
Annual gross switching since start of liberalisation	0.15	0.15	0.15
Domestic			
Market share of largest supplier	0.24	0.17	0.25
Market share of two largest suppliers	0.45	0.34	0.49
Market share of three largest suppliers	0.60	0.51	0.70
Annual gross switching since start of liberalisation	0.12	0.15	0.10

Source: OXERA.

Summary

The scenarios lead to the following potential changes in the electricity scores:

- the competitive area scores range between 8.6 and 9.1, compared with a score of 8.8 in 2003; and
- the overall electricity score is in the range 9 to 9.3, compared with 9.2 in 2003.

A1.1.2 Gas

The preliminary 2003 data, reproduced in Table A1.5, presents a similar pattern to that for the electricity sector, with maximum scores in the non-competitive area (ie, in the network-related activities) and in the wholesale market. As in the electricity analysis, the areas where there are current maximum scores are not anticipated to alter under a downside scenario. As already discussed in the previous sub-section, this implies the need to focus on the upstream and downstream areas as the main drivers of possible changes to the gas scores.

Table A1.5: Summary of 2003 gas ranking scores

High-level scores	Preliminary 2003
Upstream market	6.0
Wholesale market	10.0
Downstream supply	4.1
Score—all competitive areas	**6.6**
Network-related activities	10.0
Score—non-competitive area	**10.0**
Overall gas score	7.6

Source: OXERA.

Upstream competition

By 2008 the net import position for gas will be more pronounced. Also, recent announcements on import deals struck by some of the major players suggest that there will be greater concentration in the shipper position, with the current larger shippers/suppliers increasing their portfolio positions to address the perceived rise in supply portfolio exposure. This implies that the upside potential is relatively limited, whereas the downside may be quite substantive.

Thus, the upside position assumes the same market concentration as in the 2003 analysis, which itself was a substantial reduction on the 2002 position; whereas the downside assumes that the largest shipper increases its market share in the longer term, leading to further concentration in the market.

Table A1.6: Upstream score scenarios

Indicator	Preliminary 2003	Upside	Downside
Market share of the largest shipper	0.25	0.25	0.35
Market share of the two largest shippers	0.45	0.45	0.55
Market share of the three largest shippers	0.60	0.60	0.70

Source: OXERA.

Downstream competition

As in electricity, changes in gas retail market shares will depend on the likely risks faced by the companies, the extent of new-entry possibilities, and the scope for further market acquisitions. In the domestic market, the downside case assumes that there is little change in Centrica's position as the largest supplier, with minor changes to the market shares of competitors. Even with an assumed merger between the two smallest players in the electricity supply business, there would be no real impact on the market shares of the second- and third-largest suppliers.

However, the downside case assumes that switching activity is maintained at current levels and applies to a larger segment of the market, leading to a gradual reduction in Centrica's market share which is spread equally among the five other major domestic market players.

Once more, the adjustments in the I&C markets are less easy to predict, and an upside case has assumed a reduction in the market shares of the largest suppliers to 15% each. This assumes that no one firm has a strong position in all segments of the I&C market. However, the downside assumes that there is scope for further consolidation as increased price volatility leads to higher risk for some

suppliers, with larger players benefiting from economies of scale in operation and acquiring customers on this basis.

Table A1.7: Downstream competition scenarios

Indicator	Preliminary 2003	Upside	Downside
I&C market			
Degree of supply market opening	100%	100%	100%
Market share of largest supplier	0.2	0.15	0.25
Market share of two largest suppliers	0.39	0.30	0.45
Market share of three largest suppliers	0.58	0.45	0.65
Annual gross switching since start of liberalisation	0.16	0.16	0.10
Domestic			
Market share of largest supplier	0.63	0.50	0.60
Market share of two largest suppliers	0.75	0.65	0.75
Market share of three largest suppliers	0.84	0.77	0.85
Annual gross switching since start of liberalisation	0.19	0.19	0.15

Source: OXERA.

Summary

The gas market scores are therefore affected in the following manner:

- the score across the competitive areas ranges from 5.6 to 7.1, compared with a current value of 6.6;
- the overall gas score ranges from 6.9 to 8 compared with the 2003 figure of 7.6.

A1.1.3 Overall energy scores

Table A1.8 shows the overall energy scores that are associated with the upside and downside scenarios in both gas and electricity. In 2003, the weighting on the gas score was 74%. Using 2005 and 2010 projections from the most recent DTI energy projections on total final demand implies a weighting of 66% or 67% respectively. Therefore, the figures presented in Table A1.8 are weighted using a 66% factor.

Table A1.8:Overall energy score scenarios

	Preliminary 2003	Upside	Downside
Electricity market score	9.2	9.3	9.0
Gas market score	7.6	8.0	6.9
Gas weighting	0.74	0.66	0.66
Overall energy score	8.0	8.4	7.6

Source: OXERA.

Consequently, according to this analysis, the UK might see its score vary by around ±5% (or 0.4 in absolute terms) in the period up to 2008. The downside on the gas market is offset slightly by a reduction in the overall gas market weighting. However, as this shows, the downside scenario is broadly equivalent to the UK's position in 2002.

A1.2 Comparison with 2003 comparator group

On the basis of the scenarios described in section A1.1, the UK's competitiveness score would still compare favourably with the current scores for the 2003 comparator group presented in the main report. Although the UK would lose its position as the most competitive market to Sweden (whose current score of 7.9 would exceed the UK's revised score), it would still achieve the PSA target against this out-turn position.

However, it is to be expected that there will be developments in market structure and performance in these countries that would further affect the UK's ranking. This sub-section discusses the likelihood of conditions emerging in these countries that would ensure that their overall energy competitiveness score exceeded that of the UK.

In general, the conditions required will be for the country in question to evolve towards a market structure in either or both their electricity and gas markets which is broadly comparable with that in Tables A1.2, A1.4, A1.6 and A1.7 above. The extent of the change required across these countries is illustrated in Table A1.9, where the concentration ratios used in the 2003 PSA methodology are compared.

Table A1.9: Comparison of market structures (%)

	UK	Comparator group range
Electricity		
Generator market concentration	28	55–68
I&C market concentration	40	21–75
Domestic market concentration	43	21–69
Gas		
Shipper concentration	43	85–100
I&C market concentration	39	70–100
Domestic market concentration	74	70–100

Note: Only Sweden has a domestic gas market concentration less than the UK, the remaining countries all have greater than 83% market concentration.
Source: OXERA.

Table A1.9 highlights three key areas where the reported structure of the UK market differs significantly from the comparator group:

- the generation market;
- the gas shipper market; and
- the I&C gas supply market.

For each of these, there are some important drivers that have assisted the development of these markets. For both elements of the gas market, the following have been important influences:

- the lack of import dependence and the large number of offshore producers active on the UK Continental Shelf;
- large volumes of surplus gas released through regulatory mechanisms (the gas release scheme and the 90:10 rule) into an open market;
- significant large-user demand growth (in particular, power generation);

- agreed targets for reduction in the market share of incumbent British Gas; and
- forceful regulation to facilitate the development of competitive gas markets.

Similarly, in electricity, comparable drivers have existed, including:

- restructuring and divestment of plant;
- initial vertical separation of generation and supply;
- a transparent set of wholesale trading arrangements; and
- plentiful supplies of cheap input fuels.

In some respects, therefore, the question is whether similar drivers for change can be expected to emerge in the comparators in these key areas. Furthermore, there is the secondary issue that, even if such drivers exist, they may not be effective over the period under consideration (ie, up to 2008). The process of liberalisation in the UK has evolved over a decade or more, and change has tended to be gradual. Thus, implementing such changes in an environment where energy costs are relatively high, infrastructure investment requirements are increasing and there are growing import dependence and security-of-supply concerns, may be less politically acceptable.

However, the degree to which the conditions must be met in *both* markets depends on the relative weighting of the two markets in the country in question. For example, as discussed below, Sweden has a 7% weighting on its gas market (see Table A1.10 below), with the implication that marginal improvements in the electricity score are fed through almost one-for-one into the final energy score. Thus, even if Sweden matched the competitiveness score for the UK in the gas market, this would have little impact on its overall energy competitiveness score, whereas a small improvement in its electricity competitiveness score would have a significant effect on the overall position.

In looking at the broader prospects for the comparator countries, therefore, the question arises of whether it is developments in the gas or electricity market that are expected to be most important in determining overall energy market competitiveness relative to the UK going forward.

Where the gas market weighting of the country being considered is above that of the UK, the focus is on the likely development of that market, since this will be the more influential indicator of overall competitiveness. The countries shaded in Table A1.10 are assumed to be those where the performance in the gas market will be the crucial factor.

Table A1.10: Gas market weightings among EU15

Country	Gas market weighting (2003)
Netherlands	0.82
Italy	0.71
Ireland	0.68
Belgium	0.67
Germany	0.63
Austria	0.6
Denmark	0.6
Luxembourg	0.59
France	0.52
Spain	0.5
Portugal	0.42
Finland	0.38
Greece	0.3
Sweden	0.07

Source: OXERA.

In the remaining markets, a focus on the electricity sector is appropriate where the importance of the gas market is relatively low (ie, for Portugal, Greece, Finland and Sweden), whereas, for the remaining countries, a balanced development of competition towards that in the UK in both markets may be important and consideration is therefore given to both market segments.

Nevertheless, it is worth noting that the UK's position in the electricity market is, and is expected to remain, relatively competitive in both the upside and downside scenarios. It is therefore likely to be gas market developments that will dominate the risk factors to the UK with regard to future attainment of the PSA target.

A brief discussion of the six comparators for the 2003 target is provided below, with indications of the extent of change that each market would have to expect in order to improve its competitiveness score relative to the UK.

A1.2.1 Sweden

Sweden has been ranked second, behind the UK, in both the 2002 and 2003 PSA analyses, although it closed the gap on the UK in 2003. The main reason for the strong Swedish performance is that it has a small gas sector (7% of combined consumption) and is therefore only minimally affected by the downward bias in total energy scores that less competitive gas market structures have on the total energy score.

It seems obvious, therefore, to focus on the electricity market as the key driver of increased competitiveness. As mentioned above, if the UK follows the downside scenario, there need be no further changes in the Swedish market for Sweden to overtake the UK.

In relation to the upside case for the UK, this would require further improvement for Sweden. The only area where Sweden has a less advantageous score than the UK is in the upstream generation market. It has an implied market concentration of 68% (using the methodology employed in the

scoring tables as opposed to a formal HHI), and requires a reduction in its concentration to below 50% to overtake the UK's score in overall energy rankings.

This would represent a significant change in the structure of generation ownership in Sweden. In essence, it would require a reduction in the market share of the largest generator from 49% to 30%—almost a 40% reduction in market share. Furthermore, if that share were divested as a single entity, the structure would, once again, without any additional capacity changes, be at, or very close to, the 50% concentration ratio that would imply a step reduction in the competitiveness score.

A1.2.2 Finland

There is little scope for incremental improvements to the Finnish electricity market performance. Even with a maximum score in the electricity market, the Finnish overall energy score would increase to no more than 6.6, given the current structure of the gas market. However, the major change that would be expected would be in the Finnish gas market, since the current derogation means that the monopoly position in this market is biasing the overall score downwards.

The gas market score for Finland would need to increase from 1.2 to 5 over the period in order for the Finnish overall score to equal the UK downside case. This would require a combination of the following out-turn elements in the gas market itself:

- full network access—which has been assumed for all countries over this time period;
- a reduction in the concentration in the shipper market from 100% to 70%;
- a 40% loss of market share for the incumbent supply companies in both the domestic and I&C markets (and similar reductions in overall concentration to 70%);
- development of trading markets with up to 50% volume trading relative to daily throughput.

These concentration ratios are below those currently observed in the gas markets in Austria, Spain and Italy, which, between them, have implemented gas release schemes and imposed target market shares on incumbent suppliers. Therefore, it would appear unlikely that Finland would develop a sufficiently robust gas market to overtake the UK.

A1.2.3 Denmark

The Danish electricity market is already highly competitive, according to the PSA methodology. This trend, however, is not expected to continue, for two reasons:

- there are already comments in the most recent energy policy statements in favour of increased vertical integration in the market;

- high switching rates in the first year, up to 45%, may be unsustainable. Similar high switching rates in the UK when competition was introduced declined over time and although there is still active switching in the market, the average annual switching rate has fallen over time.

Once more, however, the performance in the gas market, which in 2003 was not fully liberalised, would need to change substantively to enable Denmark to overtake the UK. As with many import-dependent countries, the gas industry is dominated by a single large shipper/supplier (DONG). At present, it is reported that the market share in shipping is above 90% and in supply above 70% (taking the I&C and domestic markets in aggregate). Thus, over the next four years, the market share of the largest shipper will also have to fall to below 50% to produce an overall energy score comparable to that in the downside scenario. This is based on the assumption that the Danish

liberalisation programme is successful, wholesale trading develops and retail supply is as competitive as in the UK.[8]

A1.2.4 Italy

In the Italian electricity market, the period up to 2008 will see the development of wholesale market trading. Divestment of generation assets has already taken place, driving a reduction in the concentration in that part of the market. Full opening of competition should be expected to lead to reductions in concentration in the retail market.

However, the Italian market is relatively more reliant on gas than the UK. Therefore, even if changes emerge which result in comparable positions in the electricity sector, the gas market will require significant improvements to compete effectively with the UK. For example, assuming that:

- the largest shipper's share of the market is reduced to 60%, which is consistent with targets set by the Italian regulator for ENI;
- a wholesale market is established and fully competitive and trading volumes grow to over 100% of daily throughput in the course of three years;
- the market share of the largest I&C supplier drops to 40% from over 90%; and
- the market share of the largest domestic supplier drops from over 90% to 60% (a larger reduction than has been witnessed in the UK market since the completion of full competition in 1998);

the Italian energy competitiveness score (assuming a score of 9.2 in the electricity sector) would still be less favourable than the UK in the downside scenario (7.3 to 7.6, respectively). Indeed, for there to be comparability with the UK downside case, concentration ratios would need to fall to levels almost half those currently observed in the non-UK comparator group (ie, from around 80% to 40%).

A1.2.5 Spain

Spain has a more balanced energy market than the other comparators, with a 50:50 split between gas and electricity in total consumption. In the electricity market, three generators account for more than 80% of capacity and these are part of vertically integrated groups. Ownership changes have taken place, but there has been no indication that there will be any further regulatory action to adjust the market concentration as it stands at present. A similar position exists in electricity supply, with a small number of regional companies dominating the market. The regional structure in the UK, with 15 electricity suppliers, created a much less concentrated market structure (as perceived in the current methodology).

In gas, the government has instituted a gas release scheme to address the highly concentrated gas import position, but this has allocated only a small proportion of supplies and was taken up by only a few players.

[8] It should be noted that, in the UK, the liberalisation process has been developing for over ten years in the I&C market and eight years in the domestic market.

A1.2.6 Austria

Austria is in a similar position to Italy and Denmark, in that it has a relatively large gas market. The degree of pipeline import capacity is much larger than consumption, and a fledgling trading hub is emerging at Baumgarten. However, the largest shipper (OMV) still controls over 90% of the gas available in the Austrian market and, despite the existence of a gas release programme, there is no indication that the concentration will fall anywhere near the levels implied in Table A1.9 above.

A1.2.7 Summary

Table A1.11 summarises the likelihood that the 2003 comparator group will be able to overtake the UK under the upside and downside scenarios. The likelihood is defined as high, medium or low:

- 'high' implies that this is a very high probability event with minimal change in the market structure or legislative regime required;
- 'medium' indicates that comparability with the UK is achievable with some substantive adjustment to market structures required across one or both sectors;
- 'low' indicates that there is very little probability that the necessary changes would be achievable in the timeframe under consideration.

As Table A1.11 illustrates, although it is clear that Sweden may overtake the UK if the downside scenario emerges, there is generally a low risk that the UK will be adversely affected in the upside scenario. On the downside scenario scores, a similar picture emerges. Although the UK's score declines in this scenario, the other countries' existing market structures mean that they would require changes in market behaviour that far outweigh those observed in the UK over the same time period and for which there appears to be limited appetite in recent government energy policy announcements.

It is likely to be harder to institute substantial restructuring of gas markets to reflect the structures created in the UK in a market with limited supply surpluses and reliant on ensuring delivery from import sources through large, costly, transit infrastructure that need to be underwritten by long-term contracts in the absence of mature wholesale trading markets.

Table A1.11: Summary of upside and downside scenario ranking risk

	Potential to overtake UK score	
	Upside scenario	**Downside scenario**
Sweden	Medium	High
Finland	Low	Low
Austria	Low	Low
Spain	Low	Low
Denmark	Low	Low
Italy	Low	Low

Source: OXERA.

A1.3 Future comparators

In addition to changes in the development of the markets in the 2003 comparator group, more countries will pass the initial filter in subsequent years. For the European countries covered in the above tables (EU15), the determining factors will be:

- the speed of full market opening in one or other of their energy markets; and
- the introduction of rTPA (for Germany alone).

Table A1.12 summarises the year in which countries might be expected to pass the initial filter criteria, noting that:

- all countries will be expected to implement the provisions of the new Directives, which call for full liberalisation by 2007;
- the introduction of rTPA in Germany is expected to coincide with the establishment of an independent regulator. Although the timing of this remains uncertain, it is anticipated that this will coincide with the full liberalisation in 2007;
- the table does not account for the application of the 'average opening' criteria.

Table A1.12: Fulfilment of initial filter criteria

Year	Country passing filter
2004	Netherlands
	Portugal
2005	Ireland
2006	Belgium
2007	Germany
	France
	Greece
	Luxembourg

Source: OXERA.

Thus, over the next few years, further comparators will emerge. However, there are reasons to suggest that these will not necessarily challenge the UK's competitiveness ranking, as explained in Table A1.13.

Table A1.13: Factors affecting future competitiveness scores

Country	Negative factors
Netherlands	Very high gas market weighting
Portugal	Derogation on gas market implies low score
	Concentrated generation market and relatively small size (11 GW) limits degree of competition
Ireland	Very small market for electricity and gas
Belgium	Gas market still with monopolistic import position
	Highly concentrated generation market
	Small size of generation market
Germany	Still lack of clarity on independent regulator and rTPA
	Relatively concentrated electricity market with significant consolidation and vertical integration having already taken place
France	Size and position of incumbents
Greece	Derogation on gas market implies low score
Luxembourg	No effective electricity market—reliant on interconnection

Source: OXERA.

Using the elements outlined in Table A1.13, the following tentative assessment may be provided:

- the Netherlands, given its existing gas reserves, the development of hub trading and the current market concentration in gas supply, may have a medium probability of overtaking the UK, on the upside or downside scenario, in the period from 2004 to 2008;
- Germany has a medium probability of challenging the UK from 2007 onwards, with this position slightly more likely if the UK is in the downside scenario;
- the remaining countries have a low probability of challenging the UK on either scenario.

A1.4 Summary

The scenarios provided for the UK indicate that relatively little movement in the overall energy score may be expected over the next few years. Similarly, given the starting point for most of the other European countries and the policy initiatives that have been implemented therein, it does not seem that, realistically, there is scope to institute the level of change required to deliver similar competitive market structures to the UK in all but a few cases.

In the downside scenario, there is a possibility that, in 2007, the UK may be as low as fourth in the ranking, thereby failing to meet the PSA target. However, in the upside scenario the likelihood of not meeting the target is greatly reduced.